26th Journées Arithmétiques
SAINT-ETIENNE '09

XXVI-ièmes Journées Arithmétiques

6-10 juillet, 2009

Saint-Étienne, France.

Organisées par

l'Université Jean-Monnet (Saint-Étienne)

PRES Université Lyon,
Université Jean-Monnet,
Laboratoire de Mathématiques de l'Université de Saint-Étienne (LaMUSE), EA 3989
23, rue du Docteur Paul Michelon
42023 SAINT-ÉTIENNE CEDEX 02, France.

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Bienvenue

Bienvenue aux Journées arithmétiques 2009. C'est à la ville de Saint-Étienne que revient l'honneur de recevoir du 6 au 10 juillet cette vingt-sixième édition des JA, succédant ainsi à Rome, Lille, Graz, Marseille et Edimbourg, pour ne citer que les rencontres les plus récentes.

Ces Journées sont organisées par l'Université de Saint-Étienne, avec le soutien du CNRS, du GDR de Théorie des Nombres, de la Société Mathématique de France, du LaMUSE, du Ministère de l'Enseignement Supérieur et de la Recherche et des collectivités locales ; la ville de Saint-Étienne, le Conseil Général de la Loire et le Conseil Régional de la région Rhône-Alpes.

Les Journées Arithmétiques vont se dérouler sur le site Tréfilerie, à proximité du centre ville, dans les locaux des Facultés des Lettres et Sciences Humaines.

Le comité d'organisation tient à remercier chaleureusement le Comité Scientifique pour son travail de sélection des conférenciers invités, dans une communauté internationale de mathématiciens brillants et représentant une grande diversité de thèmes de recherche en arithmétique. Le comité remercie également les conférenciers invités pour leur contribution à ces Journées à travers des exposés prometteurs. Le dynamisme de la recherche en Théorie des Nombres dans le monde va s'illustrer également lors des exposés courts, pour lesquels plus de la moitié des participants a accepté de contribuer.

Nos chaleureux remerciements vont à la secrétaire du LaMUSE, Pascale Villet, pour son investissement et sa disponibilité dans l'organisation des JA2009, ainsi que nos collègues Alain Faisant et François Gramain. Nous remercions également l'Office du Tourisme pour prise en charge de la logistique, relative notamment à toute la procédure de réservation et à l'inscription des participants.

Nous remercions également le personnel technique et informatique de l'Université de Saint-Étienne pour la mise en place et l'installation des locaux hébergeant ces Journées Arithmétiques.

Nous vous souhaitons de passer une excellente semaine pour cette XXVIème édition des JA qui regroupe environ 240 participants, de 38 nationalités, venus assister à 12 conférences plénières et 118 exposés courts.

Le comité d'organisation,

D. Essouabri, F. Foucault, G. Grekos, F. Hennecart, F. Pellarin et O. Robert.

Welcome

Welcome to the *Journées Arithmétiques* 2009. The city of Saint-Étienne has the privilege to host this twenty-sixth edition of the JA, from July 6th to 10th, following the example of Rome, Lille, Graz, Marseille and Edinburgh, to name the most recent meetings.

These *Journées* are organized by : the University of Saint-Étienne, with the support of the CNRS, the GDR of Number Theory, the *Société Mathématique de France*, the *LaMUSE*, the *Ministère de l'Enseignement Supérieur et de la Recherche* and by several local structures ; the city of Saint-Étienne, the *Conseil Général* of the region *Loire* and the *Conseil Régional* of the region of *Rhône-alpes.*

The *Journées Arithmétiques* will take place at the *Trefilerie* Campus, near the city center, where the Human Science Faculty is.

The organizing committee would like to warmly thank the Scientific Committee for its work of selection, in an international community of brilliant mathematicians, of the invited speakers, representing a large selection of research themes in arithmetic. The committee thanks the invited speakers for their contribution to these Journées through stimulating talks. The vitality of the research in number theory at a world scale will also show through short talks, for which more than half of the participants accepted to contribute. Our sincere thanks go to the LaMUSE secretary, Pascale Villet, for the time spent in the organization of the JA2009 as well as our colleagues Alain Faisant et François Gramain. We also thank the Office du Tourisme for taking charge of the reservation procedures, in particular for the registration of the participants. We would also like to thank the technical and computer staff of the University of Saint-Étienne for installing the required technology to host the Journées Arithmétiques.

We wish you, participant, an excellent week for this XXVIth edition of the JA, which gathers about 240 participants, from 38 nationalities, who come to attend 12 plenary talks, and about 118 contributed talks.

The organizing committee,

D. Essouabri, F. Foucault, G. Grekos, F. Hennecart, F. Pellarin et O. Robert.

Comité scientifique/Scientific Committee

Shigeki Akiyama	Université de Niigata, Japon/Japan
Francesco Amoroso	Université de Caen, France
Kevin Buzzard	Imperial College London, Royaume-Uni/UK
Brian Conrad	Stanford, USA
Katia Consani	Johns Hopkins, USA
Pierre Liardet	Université de Provence, France [President]
Richard Pink	ETH Zurich, Suisse/Switzerland
Paula Tretkoff (née Cohen)	Texas A&M, USA
Jerzy Urbanowicz	IMPAN, Pologne/Poland
Gerard Van der Geer	Université d'Amsterdam, Pays-Bas/The Netherlands

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Chapitre 1

Informations générales

1.1 Localisation

Le colloque aura lieu sur le campus Tréfilerie de l'université Jean-Monnet
à l'adresse suivante :

Université Jean Monnet (Saint-Étienne) Campus Tréfilerie,
33 rue du 11 Novembre,
Maison de l'Université,
42023 Saint-Étienne cédex 2, FRANCE.

L'ouverture du colloque et les conférences plénières auront lieu en salle E01, J01 et KR1, les exposés courts auront lieu en salles E01, J01, SR2, SR5 et SR7. Des panneaux de signalisation vous aideront à atteindre le bureau d'enregistrement et les salles des exposés à partir de l'arrêt du Tram Tréfilerie.

Evénements spéciaux :
• Mardi 7 juillet à 19h : Réception par Mr Maurice Vincent, Maire de Saint-Étienne, à l'hôtel de ville de Saint-Étienne.
• Mercredi 8 juillet après-midi : libre ou excursions.
• Jeudi 9 juillet à 20h : Dîner du colloque au restaurant le cercle (voir adresse ci-dessous).
• Les Journées Arithmétiques se termineront le vendredi 10 juillet à 17h30.

1.2 Bureau d'enregistrement et secrétariat du colloque

l'enregistrement aurra lieu en Salle LR2
Les différentes opérations sont à effectuer :
Lundi de 8h45 à 9h30 et pendant les pauses déjeuner et café.
Du lundi au vendredi, pendant les pauses café.

1.3 Salles informatiques

Deux salles informatiques sont mises à disposition des participants pour se connecter à internet. Des panneaux de signalisation vous aideront à vous diriger du bureau d'enregistrement à ces salles. Les paramètres de connexion seront disponibles dans le secrétariat du colloque ou dans les salles informatiques.

1.4 Repas

Durant le colloque, le restaurant universitaire sera ouvert aux participants les midis, du lundi au vendredi. Il sera proposé un choix de plusieurs plats. Le prix de chaque repas est de 7,50 euros (café inclus). Les repas doivent être commandés au moment de l'inscription.

Pour les participants qui le souhaitent, il est possible de manger au Restaurant Universitaire "à la carte" : le paiement se fait alors sur place en espèces.

Il est également possible de déjeuner dans les nombreux restaurants qui se trouvent aux environs du campus.

1.5 Numéro spécial du Journal de Théorie des nombres de Bordeaux

Le Journal de Théorie des nombres de Bordeaux (http ://www.emis.de/journals/JTNB/) dédiera un fascicule complet aux journées arithmétiques de Saint-Étienne 2009. Les manuscrits doivent être envoyés au Journal [Voir http ://almira.math.u-bordeaux.fr/jtnb/jtnbsubmit.html] en fichier .pdf ou .ps, avant le 16 janvier 2010. Les articles acceptés bénéficieront du même statut que tous les autres articles parus dans le journal et devront donc satisfaire aux mêmes exigences.

1.6 Adresses utiles

Nom	Adresse
Office de tourisme	16 avenue de la Libération.
Résidence la Cotonne	Boulevard Raoul Duval 42100 Saint-Etienne.
Restaurant le Cercle	15, Place de l'Hôtel de Ville, 42000 Saint-Etienne. Tel : 04 77 25 27 27
Hôtel de ville	Place de l'hôtel de ville.

Chapitre 2

Generalities

2.1 Location

The Conference takes place in the campus Tréfilerie of Jean-Monnet's University
at the following address :

Université Jean Monnet (Saint-Étienne) Campus Tréfilerie,
33, rue du 11 Novembre,
Maison de l'Université,
42023 Saint-Étienne cedex 2, FRANCE.

The opening and the plenary talks will be in rooms E01, J01 and KR1, the contributed talks in rooms E01, J01, SR2, SR5 et SR7. Sign posts will guide you from the Tram station Tréfilerie to the registration desk and the lecture rooms.

Social events :
• Tuesday, July 7, 19h : Reception by the Mayor of Saint-Étienne, Mr. Maurice Vincent at "Hôtel de Ville".
• Wednesday, July 8 afternoon : free or excursion.
• Thursday, July 9, 20h : Conference Dinner in the restaurant "le Cercle" (see the adress below).
• The Journées Arithmétiques will end on Friday, July 10 at 17h30.

2.2 Registration Desk and Conference office

This will be in room LR2.
Monday ; 8h45-9h45 and during lunch and coffee breaks.
From Tuesday to Friday, during coffe breaks.

2.3 Computer facilities

Two computer rooms for internet connections will be available. Sign posts will guide you from the registration desk to these rooms. Parameters for connections will be available in the conference office or in the computer rooms.

2.4 Restaurant

During the meeting, the University Cafeteria will be open to the participants for lunch from Monday to Friday, and will provide an offer of various meals. The price for each meal is 7,50 euros (including coffee). Meals have to be booked in advance while you are registering.

It is also possible to have lunch at the University Cafeteria, and pay for a regular meal directly in cash.

2.5 Special issue of the Journal de Théorie des Nombres de Bordeaux :

The Journal de Théorie des Nombres de Bordeaux (http ://www.emis.de/journals/JTNB/) has accepted to publish a special issue of the JA Saint-Étienne 2009. Manuscripts have to be sent to the Journal [see http ://almira.math.u-bordeaux.fr/jtnb/jtnbsubmit.html] as a .ps or .pdf file, no later than January 16th, 2010. They will be refereed according to the standard rules of the Journal.

2.6 Useful addresses

Name	Adress
Office de tourisme	16 avenue de la Libération.
Résidence la Cotonne	Boulevard Raoul Duval 42100 Saint-Etienne.
Restaurant le Cercle	15, Place de l'Hôtel de Ville, 42000 Saint-Etienne. Tel : 04 77 25 27 27
Hôtel de ville	Place de l'hôtel de ville.

Chapitre 3

Programme/Program

3.1 Planning/Overview

Lundi 6 juillet/Monday, July 6th :

8h45-9h30	Bienvenue/Welcome
9h30-9h45	Ouverture du Colloque/Opening of the Conference
9h45-10h45	**Jeffrey C. Lagarias** "Smooth solutions to the ABC equation"
10h45-11h15	Pause café/Coffee break
11h15-12h15	**Jerzy Kaczorowski** "Classification of L-functions of small degrees"
12h15-14h	Pause déjeuner/Lunch break
14h-15h30	Office de Tourisme (pour les participants concernés/participants who may be concerned)
15h30-16h30	Sessions parallèles/Contributed talks
16h30-17h	Pause café/Coffee break
17h-18h30	Sessions parallèles/Contributed talks

Mardi 7 juillet/Tuesday, July 7th :

9h-10h	**Laurent Lafforgue** "A propos du principe de fonctorialité de Langlands et de la formule de Poisson"
10h-10h30	Pause café/Coffee break
10h45-11h45	**Laurent Berger** "Représentations p-adiques et (φ, Γ)-modules"
11h45-12h	Photographie du Colloque/Photograph of the Conference par/by Marlène Truchet
12h-13h45	Pause déjeuner/Lunch break
13h45-14h45	**Alain Connes** "Le monoïde des classes d'adèles"
15h-16h30	Sessions parallèles/Contributed talks
16h30-17h	Pause café/Coffee break
17h-18h	**Jean-Marie De Koninck** Conférence tout public/public lecture "La vie secrète des Mathématiques"
19h	Réception par le Maire de Saint-Étienne/Reception by the Mayor of Saint-Étienne, **Maurice Vincent**

Mercredi 8 juillet/Wednesday, July 8th :

9h-10h	**Manfred Einsiedler** "Applications of measure rigidity of diagonalizable actions"
10h-10h30	Pause café/Coffee break
10h30-12h30	Sessions parallèles/Contributed talks
12h30-14h	Pause déjeuner/Lunch break
14h	Départ excursions et visites/Beginning of tours and visits

Jeudi 9 juillet/Thursday, July 9th :

9h-10h	**Yann Bugeaud** "Versions quantitatives du théorème du sous-espace et applications"
10h-10h30	Pause café/Coffee break
10h30-11h30	**Michael Stoll** "Rational points on curves"
11h30-12h	Discussion sur les prochaines Journées Arithmétiques/ Discussion about the next Journées Arithmétiques
12h-13h45	Pause déjeuner/Lunch break
13h45-14h45	**Jean-Pierre Wintenberger** "Sur la conjecture de modularité de Serre"
15h-16h	Sessions parallèles/Contributed talks
16h-16h30	Pause café/Coffee break
16h30-18h	Sessions parallèles/Contributed talks
20h	Dîner du Colloque/Conference dinner

Vendredi 10 juillet/Friday, July 10th :

9h-10h15	**Matthew Baker** "Graphs and arithmetic geometry"
10h15-10h45	Pause café/Coffee break
10h45-11h45	**Joseph H. Silverman** "Specialization theorems and unlikely intersections"
11h45-13h30	Pause déjeuner/Lunch break
13h30-15h30	Sessions parallèles/Contributed talks
15h30-16h	Pause café/Coffee break
16h-18h	Sessions parallèles/Contributed talks
18h-18h15	Fin du Colloque/End of the Conference

3.2 Lundi 6 juillet/Monday, July 6

8h45-9h30	Bienvenue/Welcome
9h30-9h45	Ouverture du colloque/Opening. Salle/Room KR1
9h45-10h45	**Jeffrey C. Lagarias** "Smooth solutions to the ABC equation". Salle/Room KR1
10h45-11h15	Pause café/Coffee break
11h15-12h15	**Jerzy Kaczorowski** "Classification of L-functions of small degrees". Salle/Room J01
12h15-14h	Pause déjeuner/Lunch break
14h-15h30	Office du Tourisme
15h30-16h30	Sessions parallèles/Contributed talks
16h30-17h	Pause café/Coffee break
17h-18h30	Sessions parallèles/Contributed talks

Sessions parallèles/Contributed talks :

	Salle/Room J01	Salle/Room E01	Salle/Room SR2	Salle/Room SR5	Salle/Room SR7
15h30-16h	M. J. Bertin	E. Balandraud	C. Helou	A. Bruno	J.A. Antoniadis
16h-16h30	L. Delabarre	H. Faure	A. Leriche	V. Parusnikov	T. Aouam
16h30-17h	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
17h-17h30	A. Saldana	P. Hegarty	R. Okazaki	E. Gaudron	R. Cosset
17h30-18h	M. Spreafico	Thai Hoang LE	A.M. Pacelli	T. Willging	J.C. Douai
18h-18h30	Jianqiang Zhao	Y.V. Stanchescu	A. Reinhart	H. Kaneko	M. Sadek

Lundi 6 juillet/Monday, July 6 : Titres des exposés/Titles of the talks

Conférences plénières/Plenary talks

9h45-10h45	Jeffrey C. Lagarias "Smooth solutions to the ABC equation"Salle/Room KR1
11h15-12h15	Jerzy Kaczorowski "Classification of L-functions of small degrees" Salle/Room J01

Exposés courts/Contributed talks—Salle/Room J01

15h30-16h	Marie José Bertin : *Fonctions zeta d'Epstein et dilogarithme de Bloch et Wigner*
16h-16h30	Ludovic Delabarre : *Domaine maximal de prolongement méromorphe d'un produit eulérien et applications*
17h-17h30	Amandine Saldana : *Des fonctions de distribution aux séries de Dirichlet à deux variables : un exemple concret*
17h30-18h	Mauro Spreafico : *Zeta determinants for double sequences*
18h-18h30	Jianqiang Zhao : *Special values of Witten multiple zeta functions*

Exposés courts/Contributed talks—Salle/Room E01

15h30-16h	Eric Balandraud : *An application of Ramanujan sums to equidistribution*
16h-16h30	Henri Faure : *Discrépance quadratique d'ensembles plans*
17h-17h30	Peter Hegarty : *The order of an asymptotic basis*
17h30-18h	Thai Hoang LE : *Green-Tao theorem in function fields*
18h-18h30	Yonutz V. Stanchescu : *Sets with several centers of symmetry*

Exposés courts/Contributed talks—Salle/Room SR2

15h30-16h	Charles Helou : *A reciprocal relation between cyclotomic fields*
16h-16h30	Amandine Leriche : *Groupes, corps et extensions de Polya : une question de capitulation*
17h-17h30	Ryotaro Okazaki : *On a lower bound for unit with application in Weber's class number problem*
17h30-18h	Allison M. Pacelli : *Class Number Indivisibility in Global Function Fields*
18h-18h30	Andreas Reinhart : *Arithmetic of lattices over Dedekind domains*

Exposés courts/Contributed talks—Salle/Room SR5

15h30-16h	Alexander Bruno : *Two-sided generalization of the continued fraction*
16h-16h30	Vladimir Parusnikov : *Continued fractions to the nearest even number*
17h-17h30	Éric Gaudron : *Lemmes de Siegel généralisés*
17h30-18h	Thomas Willging : *On lattices with maximal lengths*
18h-18h30	Hajime Kaneko : *On the fractional parts of the powers of algebraic numbers*

Exposés courts/Contributed talks—Salle/Room SR7

15h30-16h	Jannis A. Antoniadis : *On cyclic covers of the projective line*
16h-16h30	Titem Aouam : *Etude des fibrations elliptiques d'une surface K3*
17h-17h30	Romain Cosset : *Factorisation avec des courbes de genre 2*
17h30-18h	Jean-Claude Douai : *Points rationnels dans les espaces homogènes de groupes réductifs définis sur certains corps de dimension cohomologique égale a deux*
18h-18h30	Mohammad Sadek : *Models of genus one curves*

3.3 Mardi 7 juillet/Tuesday, July 7

9h-10h	**Laurent Lafforgue** "A propos du principe de fonctorialité de Langlands et de la formule de Poisson". Salle/Room E01
10h-10h30	Pause café/Coffee break
10h45-11h45	**Laurent Berger** "Représentations p-adiques et (φ, Γ)-modules". Salle/Room J01
11h45-12h	Photographie du colloque/Photograph of the Conference par/by Marlène Truchet.
12h-13h45	Pause déjeuner/Lunch break
13h45-14h45	**Alain Connes** "Le monoïde des classes d'adèles". Salle/Room J01
15h-16h30	Sessions parallèles/Contributed talks
16h30-17h	Pause café/Coffee break
17h-18h	**Jean-Marie De Koninck** "La vie secrète des Mathématiques". Salle/Room J01
19h	Réception par le maire de Saint-Étienne à l'hôtel de Ville/ Reception by the Mayor of Saint-Étienne at "Hôtel de Ville"

Sessions parallèles/Contributed talks :

	Salle/Room J01	Salle/Room E01	Salle/Room SR2	Salle/Room SR5	Salle/Room SR7
15h-15h30	D.J. Grynkiewicz	S.V. Konyagin	N. Byott	A. Bazsó	F. Pazuki
15h30-16h	Takao Komatsu	A. Potter	E.J. Pickett	I. Bernadin	A. Perucca
16h-16h30	A. Zaccagnini	Shea-Ming Oon	L. Thomas	A. Dujella	D. Robert

Mardi 7 juillet/Tuesday, July 7 : Titres des exposés/Titles of the talks

Conférences plénières/Plenary talks

9h-10h	Laurent Lafforgue "A propos du principe de fonctorialité de Langlands et de la formule de Poisson". Salle/Room E01.
10h45-11h45	Laurent Berger "Représentations p-adiques et (φ, Γ)-modules". Salle/Room J01.
13h45-14h45	Alain Connes "Le monoïde des classes d'adèles". Salle/Room J01.
17h-18h	Jean-Marie De Koninck "La vie secrète des Mathématiques". Salle/Room J01.

Exposés courts/Contributed talks—Salle/Room J01

15h-15h30	David J. Grynkiewicz : *The Catenary Degree of Krull Monoids*
15h30-16h	Takao Komatsu : *Arithmetical properties of Fibonacci Zeta functions*
16h-16h30	Alessandro Zaccagnini : *Prime numbers in intervals of logarithmic length*

Exposés courts/Contributed talks—Salle/Room E01

15h-15h30	Sergei V. Konyagin : *On character sum bounds in finite fields*
15h30-16h	Andrew Potter : *Computing the Factors of the lth Cyclotomic Polynomial over* $\mathbb{F}_p$
16h-16h30	Shea-Ming Oon : *Une grande famille des suites pseudo-aléatoires*

Exposés courts/Contributed talks—Salle/Room SR2

15h-15h30	Nigel Byott : *A Valuation Criterion for Normal Basis Generators of Hopf-Galois Extensions*
15h30-16h	Erik Jarl Pickett : *Self-Dual Normal Bases for the Square-Root of the Inverse Different*
16h-16h30	Lara Thomas : *Normal basis generators over local fields*

Exposés courts/Contributed talks—Salle/Room SR5

15h-15h30	András Bazsó : *On the resolution of binomial Thue equations*
15h30-16h	Bernadin Ibrahimpašić : *Solving a family of quartic Thue inequalities using continued fractions*
16h-16h30	Andrej Dujella : *Strong Diophantine triples*

Exposés courts/Contributed talks—Salle/Room SR7

15h-15h30	Fabien Pazuki : *Conjecture de Lang-Silverman et jacobiennes hyperelliptiques*
15h30-16h	Antonella Perucca : *On the order of the reductions of points on abelian varieties*
16h-16h30	Damien Robert : *Computing isogenies between abelian varieties*

3.4 Mercredi 8 juillet/Wednesday, July 8

9h-10h	**Manfred Einsiedler** "Applications of measure rigidity of diagonalizable actions" Salle/Room J01.
10h-10h30	Pause café/Coffee break
10h30-12h30	Sessions parallèles/Contributed talks
12h30-14h	Pause déjeuner/Lunch break
14h	Départ excursions et visites/Beginning of tours and visits

Sessions parallèles/Contributed talks :

	Salle/Room J01	Salle/Room E01	Salle/Room SR2	Salle/Room SR5	Salle/Room SR7
10h30-11h	V. Balinskaitė	H. Belbachir	Takashi Fukuda	J. Condon	C. Armana
11h-11h30	G. Coppola	F. Bencherif	B. Jadrijevic	J. Demeyer	R. Knevel
11h30-12h	K. Mazhouda	S.H. Hernandez	R. Thangadurai	S. Najib	C. Salgado
12h-12h30	K. Petersen	J. Sondow	Q. Wu	G. Peruginelli	L. Zhao

Mercredi 8 juillet/Wednesday, July 8 : Titres des exposés/Titles of the talks

	Conférence plénière/Plenary talk—Salle/Room J01
9h-10h	Manfred Einsiedler "Applications of measure rigidity of diagonalizable actions"

	Exposés courts/Contributed talks—Salle/Room J01
10h30-11h	Violeta Balinskaitė : *A discrete limit theorem for the Mellin transform of the Riemann zeta-function in the space of meromorphic functions*
11h-11h30	Giovanni Coppola : *On the Selberg integral of the k-divisor function and the 2k-th moment of the Riemann zeta function*
11h30-12h	Kamel Mazhouda : *Coefficients de Li généralisés*
12h-12h30	Kate Petersen : *The Generalized Riemann Hypothesis on the Average*

	Exposés courts/Contributed talks—Salle/Room E01
10h30-11h	Hacène Belbachir : *Unimodalité des rails du triangle et de la pyramide de Pascal*
11h-11h30	Farid Bencherif : *Sur une propriété des polynômes de Stirling*
11h30-12h	Santos Hernandez Hernandez : *Fibonacci numbers which are sums of three factorials*
12h-12h30	Jonathan Sondow : *Ramanujan Primes and Bertrand's Postulate*

	Exposés courts/Contributed talks—Salle/Room SR2
10h30-11h	Takashi Fukuda : *Weber's Class Number Problem*
11h-11h30	Borka Jadrijevic : *Establishing the minimal index in a parametric family of bicyclic biquadratic fields*
11h30-12h	Ravindranathan Thangadurai : *Explicit degree of a number field and quadratic non-residues*
12h-12h30	Qiang Wu : *The totally real algebraic integers with diameter less than 4*

	Exposés courts/Contributed talks—Salle/Room SR5
10h30-11h	John Condon : *Asymptotic Expansion of Mahler measure*
11h-11h30	Jeroen Demeyer : *Diophantine sets of polynomials over a number field*
11h30-12h	Salah Najib : *Indecomposable polynomials and their spectrum*
12h-12h30	Giulio Peruginelli : *Parametrization of integer valued polynomials*

	Exposés courts/Contributed talks—Salle/Room SR7
10h30-11h	Cécile Armana : *On generators of modular symbols for function fields*
11h-11h30	Roland Knevel : *Super automorphic forms on the super upper half plane*
11h30-12h	Cecilia Salgado : *On the rank of the fibres of rational elliptic surfaces*
12h-12h30	Liangyi Zhao : *On Hecke Eigenvalues at Piatetski-Shapiro Primes*

3.5 Jeudi 9 juillet/Thursday, July 9

9h-10h	**Yann Bugeaud** "Versions quantitatives du théorème du sous-espace et applications" Salle/Room E01.
10h-10h30	Pause café/Coffee break
10h30-11h30	**Michael Stoll** "Rational points on curves" Salle/Room J01
11h30-12h	Discussion sur les prochaines Journées Arithmétiques Discussion about the next Journées Arithmétiques
12h-13h45	Pause déjeuner/Lunch break
13h45-14h45	**Jean-Pierre Wintenberger** "Sur la conjecture de modularité de Serre" Salle/Room J01.
15h-16h	Sessions parallèles/Contributed talks
16h-16h30	Pause café/Coffee break
16h30-18h	Sessions parallèles/Contributed talks
20h	Dîner du Colloque au restaurant "le Cercle"/Conference dinner in the restaurant "le Cercle"

Sessions parallèles/Contributed talks :

	Salle/Room J01	Salle/Room E01	Salle/Room SR2	Salle/Room SR5	Salle/Room SR7
15h-15h30	A. Couvreur	R. Bacher	A. Julien	D. Badziahin	W. Gajda
15h30-16h	D. Rouymi	C. Banderier	A. Martin	A. Bérczes	T. Kovács
16h-16h30	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
16h30-17h	X. Guitart	I. Baoulina	S. Mendes	A. Filipin	H. Shiga
17h-17h30	O. Marmon	K. Hare	A. Philipp	O. German	D. Rabayev
17h30-18h	A. Zykin	M. Myers	A. Salinier	L. Leroux	R. Osburn

Jeudi 9 juillet/Thursday, July 9 : Titres des exposés/Titles of the talks

Conférences plénières/Plenary talks

9h-10h Yann Bugeaud “Versions quantitatives du théorème du sous-espace et applications” Salle/Room E01.

10h30-11h30 Michael Stoll “Rational points on curves” Salle/Room J01.

13h45-14h45 Jean-Pierre Wintenberger “Sur la conjecture de modularité de Serre” Salle/Room J01.

Exposés courts/Contributed talks—Salle/Room J01

15h-15h30 Alain Couvreur : *Using intersection theory for studying algebraic-geometric codes*

15h30-16h Rouymi Djamel : *Non annulation des fonctions L automorphes au point central*

16h30-17h Xavier Guitart : *Modular Abelian Varieties over Number Fields*

17h-17h30 Oscar Marmon : *The density of integral points on hypersurfaces of degree at least four*

17h30-18h Alexey Zykin : *On the Euler-Kronecker constant and limit zeta functions*

Exposés courts/Contributed talks—Salle/Room E01

15h-15h30 Roland Bacher : *Exponentials of exponential generating functions*

15h30-16h Cyril Banderier : *Quadratic, Cubic and higher order residues : new formulae and asymptotics*

16h30-17h Ioulia Baoulina : *Generating Functions for Markoff-Hurwitz Congruences*

17h-17h30 Kevin Hare : *Infinite Barker Series*

17h30-18h Marilyn Myers : *Constrained ternary integers*

Exposés courts/Contributed talks—Salle/Room SR2

15h-15h30 Angeli Julien : *Le groupe des rotations du cube réalisé par des trinômes* $X^6 + tX + t$

15h30-16h Anthony Martin : *Noyau sauvage et sommes de Gauss*

16h30-17h Sergio Mendes : *Artin-Schreier theory and the tempered dual of* $SL(2)$ *over a local field with characteristic 2*

17h-17h30 Andreas Philipp : *Orders in algebraic number fields with half-factorial localizations*

17h30-18h Alain Salinier : *Classes de conjugaison de séries de p-torsion*

Exposés courts/Contributed talks—Salle/Room SR5

15h-15h30 Dzmitry Badziahin : *Inhomogeneous Diophantine approximation on manifolds*

15h30-16h Attila Bérczes : *Effective results for points on certain subvarieties of tori*

16h30-17h Alan Filipin : *There are only finitely many D(4)-quintuples*

17h-17h30 Oleg German : *On linear forms of a given Diophantine type*

17h30-18h Louis Leroux : *Recherche des sous-variétés de torsion incluses dans une variété définie par des polynômes lacunaires*

Exposés courts/Contributed talks—Salle/Room SR7

15h-15h30 Wojciech Gajda : *On generators in Galois cohomology and class groups of cyclotomic fields*

15h30-16h Tünde Kovács : *Combinatorial numbers in binary recurrences*

16h30-17h Hironori Shiga : *A Jacobi type formula in two variables with application to new AGM*

17h-17h30 Daniel Rabayev : *Symmetric and Alternating groups as Galois groups of intersective polynomials*

17h30-18h Robert Osburn : *Automorphic properties of generating functions for generalized rank moments and Durfee symbols*

3.6 Vendredi 10 juillet/Friday, July 10

9h-10h15	**Matthew Baker** "Graphs and arithmetic geometry" Salle/Room J01.
10h15-10h45	Pause café/Coffee break
10h45-11h45	**Joseph H. Silverman** "Specialization theorems and unlikely intersections" Salle/Room E01.
11h45-13h30	Pause déjeuner/Lunch break
13h30-15h30	Sessions parallèles/Contributed talks
15h30-16h	Pause café/Coffee break
16h-18h	Sessions parallèles/Contributed talks
18h-18h15	Fin du Colloque/End of the Conference

Sessions parallèles/Contributed talks :

	Salle/Room J01	Salle/Room E01
13h30-14h	A.G. Bagdasaryan	T. Stoll
14h-14h30	A. Chadozeau	M.O. Hernane
14h30-15h	S. Jaidee	L. Misík
15h-15h30	D. Fiorilli	F. Najman
15h30-16h	Coffee break	Coffee break
16h-16h30	Š. Porubský	G. Ranieri
16h30-17h	A. Raouj	R. Giuliano

Sessions parallèles/Contributed talks :

	Salle/Room SR2	Salle/Room SR5	Salle/Room SR7
13h30-14h	S. Arias-de-Reyna	B. de Mathan	N. Billerey
14h-14h30	G. Elder	I. Gaál	V. Bosser
14h30-15h	R. Jenni	L. Hajdu	L. De Feo
15h-15h30	R. Marszalek	T. Hessami Pilehrood	S. Krishnamoorthy
15h30-16h	Coffee break	Coffee break	Coffee break
16h-16h30	A. Nickel	Su-ion Ih	I. Longhi
16h30-17h	F. Sbeity	I. Kan	D. McCarthy
17h-17h30	P. Truman	B. Sahu	G. Sills

Vendredi 10 juillet/Friday, July 10 : Titres des exposés/Titles of the talks

	Conférences plénières/Plenary talks—Salle/Room J01
9h-10h15	Matthew Baker "Graphs and arithmetic geometry"
10h45-11h45	Joseph H. Silverman "Specialization theorems and unlikely intersections"

	Exposés courts/Contributed talks—Salle/Room J01
13h30-14h	Armen G. Bagdasaryan : *Elementary evaluation of the Riemann zeta function*
14h-14h30	Arnaud Chadozeau : *On the structure of rational points close to a curve*
14h30-15h	Sawian Jaidee : *Mertens' Theorem for Arithmetical Dynamical Systems*
15h-15h30	Daniel Fiorilli : *Prime number races with two competitors*
16h-16h30	Štefan Porubský : *Solutions to arithmetic convolution equations*
16h30-17h	Abdelaziz Raouj : *Sur le nombre des diviseurs delta-proches*

	Exposés courts/Contributed talks—Salle/Room E01
13h30-14h	Thomas Stoll : *Bounds for the discrete correlation of infinite sequences on k symbols and generalized Rudin-Shapiro sequences*
14h-14h30	Mohand Ouamar Hernane : *On the independence of* $s(f(n))$ *and* $f(s(n))$
14h30-15h	Ladislav Misík : *Distribution functions of ratio block sequences*
15h-15h30	Filip Najman : *On the largest prime factor of* $n^2 - 1$
16h-16h30	Gabriele Ranieri : *Power bases for rings of integers of abelian imaginary fields*
16h30-17h	Rita Giuliano : *A general probabilistic interpretation of Benford's Law in terms of Markov chains*

	Exposés courts/Contributed talks—Salle/Room SR2
13h30-14h	Sara Arias-de-Reyna : *Tame Galois realizations over* $\mathbb{Q}$ *of linear groups*
14h-14h30	Griff Elder : *Galois scaffolding for Galois module structure*
14h30-15h	Ruth Jenni : *The Vostokov-Brueckner Formula for Higher Local Fields*
15h-15h30	Roman Marszalek : *Galois module structure of units in real abelian fields*
16h-16h30	Andreas Nickel : *Annihilation of ray class groups*
16h30-17h	Sbeity Farah : *Classes de Steinitz d'extensions non abéliennes à groupe de Galois d'ordre 16 ou extraspécial d'ordre 32 et problème de plongement*
17h-17h30	Paul Truman : *Hopf-Galois Module Structure of a Class of Tamely Ramified Extensions*

	Exposés courts/Contributed talks—Salle/Room SR5
13h30-14h	Bernard de Mathan : *Sur un problème mixte d'approximation diophantienne*
14h-14h30	István Gaál : *Diophantine equations over global function fields*
14h30-15h	Lajos Hajdu : *Perfect powers in arithmetic progression*
15h-15h30	Tatiana Hessami Pilehrood : *Series acceleration formulae for zeta values and their q-analogues*
16h-16h30	Su-ion Ih : *A property of preperiodic points*
16h30-17h	Igor Kan : *Differentiability of the Minkowski question mark function*
17h-17h30	Brundaban Sahu : *Congruences for Apéry-like numbers*

	Exposés courts/Contributed talks—Salle/Room SR7
13h30-14h	Nicolas Billerey : *Irreducibility criterion for elliptic Galois representations*
14h-14h30	Vincent Bosser : *Sur l'ordre d'annulation à l'infini des formes quasi-modulaires de Drinfeld*
14h30-15h	Luca De Feo : *Computing isogenies of elliptic curves in small characteristic*
15h-15h30	Srilakshmi Krishnamoorthy : *Atkin Lehner Involutions, Elliptic Curves and Modular Degrees*
16h-16h30	Ignazio Longhi : *Stark-Heegner points over function fields*
16h30-17h	Dermot McCarthy : *On a supercongruence conjecture of Rodriguez-Villegas?*
17h-17h30	Graham Sills : *Height Bounds on Covering Curves*

Chapitre 4

Résumés des conférences plénières/Abstracts of plenary talks

4.1 Matthew Baker : Vendredi 10 juillet/Friday, July 10, 9h-10h

Graphs and arithmetic geometry

I will discuss some connections between graph theory, arithmetic geometry, tropical geometry, and non-archimedean analytic spaces. In particular, I will discuss harmonic morphisms and Jacobians in these various contexts

4.2 Laurent Berger : Mardi 7 juillet/Tuesday, July 7, 10h30-11h30

Représentations p-adiques et (φ, Γ)-modules

Les (ϕ, Γ)-modules sont des objets introduits par Fontaine et qui permettent de travailler concrètement avec les représentations galoisiennes p-adiques, en utilisant des outils d'analyse p-adique. J'expliquerai ce que sont ces objets et quelques unes des applications de leur étude.

4.3 Yann Bugeaud : Jeudi 9 juillet/Thursday, July 9, 9h-10h

Versions quantitatives du théorème du sous-espace et applications

Remarque : La conférence sera donnée en français, *notes in English will be provided.*

Résumé : (See the english abstract below)
Le théorème de Roth affirme que, du point de vue de l'approximation par des nombres rationnels, tout nombre réel algébrique irrationnel ξ se comporte comme presque tous les nombres réels. En d'autres termes, pour tout $\varepsilon > 0$, il n'existe qu'un nombre fini de nombres rationnels p/q vérifiant

$q \geq 1$ et

$$\left|\xi - \frac{p}{q}\right| < \frac{1}{q^{2+\varepsilon}}. \tag{1}$$

Sa démonstration ne permet pas de majorer explicitement les dénominateurs des solutions de (1) ; cependant, elle conduit à une majoration du nombre de solutions p/q de (1). Une manière équivalente d'exprimer le théorème de Roth consiste à dire que, pour tout nombre algébrique réel ξ et pour tout $\varepsilon > 0$, l'ensemble des points entiers (x_1, x_2) vérifiant

$$|x_1| \cdot |x_1\xi - x_2| < (\max\{1, |x_1|, |x_2|\})^{-\varepsilon}$$

est contenu dans une union finie de droites rationnelles. Cet énoncé fut généralisé par W. M. Schmidt, qui établit vers 1970 le théorème du sous-espace.

Théorème du sous-espace.
Soient $m \geq 2$ un entier et $\varepsilon > 0$ un nombre réel. Soient $L_1, \ldots, L_m$ des formes linéaires en m variables, à coefficients algébriques réels, et linéairement indépendantes sur $\mathbb{Q}$. Alors l'ensemble des m-uplets $\mathbf{x} = (x_1, \ldots, x_m)$ de nombres entiers vérifiant

$$\prod_{i=1}^{m} |L_i(\mathbf{x})| \leq (\max\{1, |x_1|, \ldots, |x_m|\})^{-\varepsilon}$$

est contenu dans une union finie de sous-espaces stricts de $\mathbb{Q}^m$.

Vingt ans plus tard, Schmidt parvint à majorer le nombre de ces sous-espaces exceptionnels, démontrant ainsi une version quantitative du théorème du sous-espace. Ses résultats furent par la suite améliorés et généralisés, notamment en incluant des valeurs absolues p-adiques, par J.-H. Evertse et H. P. Schlickewei. Notons qu'à ce jour nous ne savons pas majorer la hauteur des sous-espaces exceptionnels, ni les entiers p et q qui apparaissent dans (1).

Au cours de cet exposé, nous présenterons de nombreuses applications du théorème du sous-espace, certaines très classiques, d'autres plus récentes. Nous montrerons que, dans bien des cas, l'utilisation des versions quantitatives conduit à d'intéressants raffinements, et cela parfois de manière inattendue. Les applications évoquées concernent notamment les équations diophantiennes, les suites récurrentes linéaires, l'approximation algébrique des nombres algébriques et la transcendance.

Abstract :
The Roth theorem asserts that, from the point of view of rational approximation, every real algebraic irrational number ξ behaves like almost all real numbers. This means that, for every positive ε, there are only finitely many rational numbers p/q satisfying $q \geq 1$ and

$$\left|\xi - \frac{p}{q}\right| < \frac{1}{q^{2+\varepsilon}}. \tag{1}$$

Its proof does not give an explicit upper bound for the denominators of the solutions to (1) ; however, it yields an upper bound for the number of solutions p/q to (1). An equivalent way to express the Roth theorem is to say that, for every real algebraic number ξ and for every positive ε, the set of integer points (x_1, x_2) satisfying

$$|x_1| \cdot |x_1\xi - x_2| < (\max\{1, |x_1|, |x_2|\})^{-\varepsilon}$$

is contained in a finite union of rational lines. The Subspace Theorem, established by W. M. Schmidt around 1970, extends this statement as follows.

Subspace Theorem.
Let $m \geq 2$ be an integer. Let ε be a positive real number. Let $L_1, \ldots, L_m$ be m linearly independent

linear forms in m variables with real algebraic coefficients. Then, the set of solutions $\mathbf{x} = (x_1, \dots, x_m)$ *in* $\mathbb{Z}^m$ *to the inequality*

$$\prod_{i=1}^{m} |L_i(\mathbf{x})| \leq (\max\{1, |x_1|, \dots, |x_m|\})^{-\varepsilon}$$

lies in finitely many proper subspaces of $\mathbb{Q}^m$.

Some twenty years later, Schmidt managed to bound explicitly the number of these exceptional subspaces, thus establishing the Quantitative Subspace Theorem. His results were subsequently improved and extended, in particular by incorporating p-adic absolute values, by J.-H. Evertse and H. P. Schlickewei, who established several powerful quantitative versions of the Subspace Theorem. Note that we are at present unable to bound from above the the height of the exceptional subspaces, as we are unable to bound from above p and q in (1).

In this talk, we will present numerous applications of the Subspace Theorem, some very classical, other more recent. We will show that, in many cases, the use of its quantitative versions leads, sometimes quite unexpectedly, to interesting refinements. Our applications are mainly concerned with Diophantine equations, linear recurrence sequences, algebraic approximation of algebraic numbers, and transcendence.

4.4 Alain Connes : **Mardi 7 juillet/Tuesday, July 7, 13h45-14h45**

Le monoïde des classes d'adèles

J'exposerai les résultats récents obtenus en collaboration avec C. Consani. Nous avons obtenu dans [1] la formule (4.1) ci-dessous pour la fonction de comptage $N(q)$, $q \in [1, \infty)$ associée par C. Soulé à la courbe hypothétique $C = \overline{\operatorname{Spec} \mathbb{Z}}$ sur $\mathbb{F}_1$ dont la fonction zêta $\zeta_C(s)$ sur $\mathbb{F}_1$ est la fonction de Riemann complète $\zeta_{\mathbb{Q}}(s) = \pi^{-s/2}\Gamma(s/2)\zeta(s)$. La fonction $N(q)$ est positive pour $q > 1$ et donnée par

$$N(q) = q - \frac{d}{dq}\left(\sum_{\rho \in Z} \operatorname{ordre}(\rho)\frac{q^{\rho+1}}{\rho+1}\right) + 1 \tag{4.1}$$

où Z est l'ensemble des zéros non-triviaux de la fonction zêta de Riemann et la dérivée est prise au sens des distributions. L'égalité (4.1) est une application typique des formules explicites de Riemann-Weil qui se formulent simplement sur le groupe des classes d'idèles. Il est donc naturel de rechercher à décrire, sinon la courbe C elle même, du moins sa contrepartie par l'isomorphisme du corps de classes, comme un espace construit en termes adèliques et muni d'une action du groupe des classes d'idèles.

Nous construisons une compactification naturelle de l'espace $M = \mathbb{A}_{\mathbb{K}}/\mathbb{K}^*$ des classes d'adèles d'un corps global $\mathbb{K}$ en considérant M comme un monoïde et en passant de la droite affine à l'espace projectif de dimension un, en utilisant le $\mathbb{F}_1$-schéma $\underline{\mathbb{P}}^1_{\mathbb{F}_1}$. Nous montrons que la réalisation spectrale des zéros des fonctions L, l'équation fonctionnelle et les formules explicites apparaissent naturellement en calculant la cohomologie des faisceaux de fonctions sur $\underline{\mathbb{P}}^1_{\mathbb{F}_1}(M)$. Plus précisément

(1) La cohomologie $H^1(\mathbb{P}^1_{\mathbb{F}_1}, \mathcal{F})$ du faisceau $\mathcal{F}$ des fonctions complexes sur l'espace projectif $\underline{\mathbb{P}}^1_{\mathbb{F}_1}(M)$ donne la réalisation spectrale des zéros des fonctions L et la symétrie associée à l'équation fonctionnelle.

(2) L'espace $\mathcal{P}(\mathbb{K})$ des éléments premiers du monoïde $M = \mathbb{A}_{\mathbb{K}}/\mathbb{K}^*$ sous l'action du groupe $C_{\mathbb{K}}$ est, en caractéristique $p > 1$, isomorphe de manière équivariante à l'espace des valuations de l'extension abélienne maximale $\mathbb{K}^{\mathrm{ab}}$ munie de l'action du groupe de Weil : $\mathcal{W}^{\mathrm{ab}} \subset \operatorname{Gal}(\mathbb{K}^{\mathrm{ab}} : \mathbb{K})$.

(3) L'espace $\mathcal{P}(\mathbb{K})$ donne, en caractéristique zéro, une contrepartie de la courbe [1] associée à un corps global en caractéristique $p > 1$ et une interprétation des formules explicites de Riemann-Weil.

Bibliographie

[1] A. Connes, C. Consani *Schemes over* $\mathbb{F}_1$ *and zeta functions* (preprint)
arXiv :0903.2024v2 [mathAG].

4.5 Jean-Marie De Koninck : Mardi 7 juillet/Thuesday, July 7, 17h-18h

La vie secrète des mathématiques

- Pourquoi l'utilisation d'une certaine courbe spirale vous permet-elle de ne pas renverser votre café à bord du TGV ?
- Comment une petite erreur mathématique dans la programmation du logiciel du missile Patriote a-t-elle pu entraîner la mort de 28 soldats américains durant la première guerre du Golfe ?
- Saviez-vous que dans une salle où il y a 57 personnes, vous êtes quasi-certain d'y retrouver deux personnes avec le même anniversaire ?
- Votre billet de loto a quatre numéros en commun avec la combinaison gagnante : devriez-vous être surpris ?
- Saviez-vous que la sécurité de vos transactions bancaires repose en grande partie sur la distribution des nombres premiers ?
- Pourquoi la résolution d'un des plus grands problèmes de mathématiques vous permettrait-elle d'économiser beaucoup de temps et d'argent dans le magasinage de vos emplettes ?
- Comment la rigueur mathématique peut-elle venir au secours de notre intuition ?

Voilà quelques-unes des questions que l'on abordera durant cet exposé et qui vous amèneront peut-être à mieux apprécier comment les mathématiques façonnent votre quotidien.

4.6 Manfred Einsiedler : Mercredi 8 juillet/Wednesday, July 8, 9h-10h

Applications of measure rigidity of diagonalizable actions

We start by recalling the conjectures and the known theorems regarding the dynamics of diagonalizable subgroup actions on homogeneous spaces. In particular, we will discuss the question which probability measures are invariant under the full diagonal subgroup A on $SL(n,\mathbb{Z}) \setminus SL(n,\mathbb{R})$ for $n > 2$ and the partial classification of such measures due to Katok, Lindenstrauss, and myself. These questions are intimately connected to certain number theoretic problems. While our understanding of the dynamics is still not complete, in some of the applications this can be overcome. We will discuss the number theoretic and equidistribution applications of the measure classification and how they are related to the dynamical problem.

4.7 Jerzy Kaczorowski : Lundi 6 juillet/Monday, July 6, 11h15-12h15

Classification of L-functions of small degrees

1. plus précisément d'un revêtement abélien convenable

The focus of the talk will be on the classification problem for L-functions of degrees $d < 2$. We shall report on a joint research with Alberto Perelli done over the last few years.

By an L-function we understand a Dirichlet series

$$F(s) = \sum_{n=1}^{\infty} \frac{a_F(n)}{n^s}, \qquad (s = \sigma + it)$$

which converges absolutely for $\sigma > 1$, admits Euler product expansion and meromorphic continuation to $\mathbb{C}$ such that $(s-1)^m F(s)$ is entire of finite order ($m = m(F) \in \mathbb{N} \cup \{0\}$), and satisfies a general functional equation of the Riemann type

$$\Phi(s) = \omega \overline{\Phi(1-\overline{s})},$$

where

$$\Phi(s) = Q^s \prod_{j=21}^{r} \Gamma(\lambda_j s + \mu_j) F(s)$$

with $Q, \lambda_j > 0$, $\Re(\mu_j) \geq 0$ and $|\omega| = 1$. A convenient framework for the study of L-functions is the Selberg class S or, more generally, the extended Selberg class $S^\sharp$. Both of them may be regarded as axiomatic models for L-functions in number theory. The main problem related to S and $S^\sharp$, apart from classical open problems such as the Riemann Hypothesis (for $F \in S$), is classifying their elements. One expects that all reasonable L-functions are Mellin transforms of automorphic forms associated with algebraic groups. In particular, one expects that the degree of every $F \in S^\sharp$ defined as $d_F = 2\sum_{j=1}^{r} \lambda_j$ is a non-negative integer (the *Degree Conjecture*). We prove that these expectations are correct in the restricted range $0 \leq d_F < 2$.

Proofs of our results are based on the detailed study of analytic properties of various twists of $F \in S^\sharp$, the most prominent one being the *standard non-linear twist* defined for $\sigma > 1$ by the following Dirichlet series

$$F(s, \alpha) := \sum_{n=1}^{\infty} \frac{a_F(n)}{n^s} \exp(2\pi i n^{1/d_F} \alpha),$$

$\alpha > 0$ being a real parameter. They are sufficient for classifying L-functions of degrees $d_F \leq 1$. In particular, explicit description of degree one L-functions follows from the fact that $F(s, \alpha)$ extends to an entire function for all $\alpha > 0$ except for an infinite discrete subset $\mathrm{spect}(F) \subset (0, \infty)$ called the spectrum of F. A general new method is developed to cover the range $1 < d_F < 2$. Here we use multidimensional twists of the form

$$\sum_{n=1}^{\infty} \frac{a(n)}{n^s} \exp\left(-2\pi i \sum_{\nu=1}^{N} \alpha_\nu n^{\kappa_\nu}\right),$$

where $\kappa_1 > \kappa_2 > \ldots > \kappa_N > 0$, $d_F \kappa_1 > 1$, are fixed. Assuming that there exists an L-function $F \in S^\sharp$ of degree between 1 and 2, a tricky algorithm is constructed which produces either a Dirichlet series with a singularity on its half-plane of absolute convergence or a non-entire twist $F(s, \alpha)$ with $\alpha \notin \mathrm{spect}(F)$. As this is impossible, one concludes that an F with $1 < d_F < 2$ cannot exist, and the Degree Conjecture follows in this case. The algorithm involves two basic operators, one reflecting periodicity of the exponential function and the second closely related to the functional equation of F. Needed properties of the latter are proved by a detailed study of hypergeometic functions.

4.8 Laurent Lafforgue, Mardi 7 juillet/Tuesday, July 7, 9h-10h

A propos du principe de fonctorialité de Langlands et de la formule de Poisson

4.9 Jeffrey C. Lagarias : **Lundi 6 juillet/Monday, July 6, 9h45-10h45**

Smooth solutions to the ABC equation

This talk considers relatively prime integer solutions to the ABC equation $A + B + C = 0$, containing only small prime factors. Let the height $H = \max(|A|, |B|, |C|)$, and smoothness $S = \max\{p : \ p \text{ a prime dividing } ABC\}$. How small can S be as a function of H so that there are infinitely many such solutions ? We show conditionally that the correct order of magnitude should be $S = (\log H)^c$ for some c. A lower bound on c follows from the ABC conjecture and an upper bound on c is derived assuming GRH. The latter bound uses the circle method with the saddle point method of Hildebrand-Tenenbaum. This is joint work with K. Soundararajan.

4.10 Joseph H. Silverman : **Vendredi 10 juillet/Friday, July 10, 10h45-11h45**

Specialization theorems and unlikely intersections

Let T be a curve and let $A \to T$ be a family of abelian varieties, all defined over $\bar{\mathbb{Q}}$. An old result of the speaker says that, subject to suitable nondegeneracy conditions, the set of $t \in T(\bar{\mathbb{Q}})$ such that the specialization map $A(T) \to A_t(\bar{\mathbb{Q}})$ fails to be injective is a set of bounded height. Bombieri, Masser, and Zannier subsequently proved an analogous result when A is replaced by a torus $\mathbb{G}_{\mathrm{m}}^n$. The specialization problem becomes considerably more difficult when the base T has dimension greater than one, in which situation Habegger has recently proven strong theorems for constant families. In this talk I will survey these results and, as time permits, sketch some of the proofs.

4.11 Michael Stoll : **Jeudi 9 juillet/Thursday, July 9, 10h30-11h30**

Rational Points on Curves

Even though an effective proof of Mordell's Conjecture/Faltings' Theorem is still out of sight, there are methods that allow us in some cases to determine the set of rational points on a curve of higher genus, or at least to decide if it possesses rational points or not. The techniques that are employed include descent, p-adic methods going back to Chabauty, or the Mordell-Weil sieve. We will explain these approaches and give several examples as an illustration of what is currently possible.

4.12 Jean-Pierre Wintenberger : **Jeudi 9 juillet/Thursday, July 9, 13h45-14h45**

Sur la conjecture de modularité de Serre

Nous expliquerons la conjecture et donneront quelques indications sur la preuve que nous en avons donné avec C. Khare.

Chapitre 5

Résumés des exposés courts/Abstracts of contributed talks

Pour les informations sur les sessions, les salles et les dates des exposés courts, voir l'index à la fin de cette section.

For information about the session, room, and day of the contributed talk, see the index at the end of this section.

Le groupe des rotations du cube réalisé par des trinômes $X^6 + tX + t$

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On exhibe une courbe elliptique qui indexe les paramètres t des trinômes X^6+tX+t, dont le groupe de Galois sur $\mathbb{Q}$ est le groupe des isométries directes du cube. Fait intéressant, cette courbe est de rang 1 sur $\mathbb{Q}$, ce qui nous donne une famille infinie de trinômes de groupe de Galois remarquable.

On discutera de la construction de cette courbe et des possibilités de trouver des courbes analogues en degré plus élevé.

On cyclic covers of the projective line

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We construct configuration spaces for cyclic covers of the projective line that admit extra automorphisms and we describe the locus of curves with given automorphism group. As an application we provide examples of arbitrary high genus that are defined over their field of moduli and are not hyperelliptic.

Etude des fibrations elliptiques d'une surface K3.

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Nous exploitons la possibilité pour une surface $K3$ elliptique d'avoir plusieurs fibrations elliptiques. Dans le cas de la surface elliptique universelle avec un point de 7-torsion, considérée comme une surface elliptique sur la courbe modulaire $X_1(7)(\simeq \mathbb{P}^1)$ certaines fibrations, définies sur $\mathbb{Q}$, permettent de construire des familles infinies de courbes elliptiques sur $\mathbb{Q}$, E_s avec $E_s \sim \mathbb{Q}\mathbb{Z}/7\mathbb{Z} \oplus \mathbb{Z}^r$, $r \geq 2$. Le groupe de Néron-Severi, de rang 20 (surface $K3$ singulière) et défini sur $\mathbb{Q}$ joue un rôle essentiel pour cette construction. Des résultats analogues existent pour les deux autres cas où les surfaces elliptiques universelles avec groupe de torsion $\mathbb{Z}/8\mathbb{Z}$ et $\mathbb{Z}/2\mathbb{Z} \times \mathbb{Z}/6\mathbb{Z}$ sont des surface $K3$.

Tame Galois realizations over Q of linear groups

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Around 1994 B. Birch posed the following question, related to the inverse Galois problem over the rational field. Given a finite group G, is there a tamely ramified Galois extension of $\mathbb{Q}$ with Galois group isomorphic to G? In this talk we address this question for some families of linear groups. We study this problem by means of the Galois representations attached to the ℓ-torsion points of elliptic curves and abelian surfaces, and we prove the following results : for each prime number ℓ, the general linear group $\mathrm{GL}_2(\mathbb{F}_\ell)$ occurs as the Galois group of a tamely ramified Galois extension of $\mathbb{Q}$, and for each prime number $\ell \geq 5$, the general simplectic group $\mathrm{GSp}_4(\mathbb{F}_\ell)$ occurs as the Galois group of a tamely ramified Galois extension of $\mathbb{Q}$. More precisely, in both cases we construct infinitely many abelian varieties (of dimension 1 or 2) that provide a tame Galois representation of the desired group.

On generators of modular symbols for function fields

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Modular symbols for $\mathbb{F}_q(T)$, introduced in 1992 by J. Teitelbaum, are the function field analogues of modular symbols. Their space is the dual of a space of automorphic forms for $\mathbb{F}_q(T)$, and is described by generators and relations. We give new results on these generators : a formula for the action of Hecke operators, in terms of generators, and an explicit basis of generators. Then, we discuss some applications to automorphic forms for $\mathbb{F}_q(T)$ of analytic rank zero, and elliptic curves over function fields.

Exponentials of exponential generating functions

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The exponential of an exponential generating function yields the exponential map from the vector-space (endowed with the trivial Lie-bracket) of power series without constant term into the commutative Lie group of formal power series starting with 1 endowed with the shuffle-product.

This map is well-defined in positive characteristic and induces the Lie-exponential maps (isomorphisms) preserving rational, respectively algebraic, formal power series over finite fields.

Inhomogeneous Diophantine approximation on manifolds

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Let $w : \mathbb{R}^+ \to \mathbb{R}^+$ be a decreasing function and $\lambda : \mathbb{R}^n \to \mathbb{R}$. We will say that a point $\mathbf{x} \in \mathbb{R}^n$ is (w, λ)-approximable if the inequality

$$||\mathbf{a} \cdot \mathbf{x} + \lambda(\mathbf{x})|| < w(|\mathbf{a}|),$$

has infinitely many integer solutions $\mathbf{a} \in \mathbb{Z}^n$. Here $|| \cdot ||$ denotes the distance to the nearest integer.

We will consider the set of (w, λ)-approximable points lying on some non-degenerate manifold. With some natural restrictions on the function λ we will present the results about the measure and Hausdorff dimension of this set.

Elementary evaluation of the Riemann zeta function

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In this talk we evaluate the Riemann zeta function within the framework of a new theoretical background, the starting points of which are : (1) a new method for ordering the integers based on the assumption that $-1 > 0$; (2) a class of real functions $f(\cdot)$ called regular and the definition of $\sum_a^b f(\cdot)$ that extends the classical definition to the case $b < a$; (3) a new regular method of summation of infinite series. Within this new setting we find an elementary method for computing the values of the zeta function and the alternating zeta function at integer points.

The talk is based on an earlier joint work with R.R. Varshamov.

An application of Ramanujan sums to equidistribution

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Ramanujan sums are arithmetic functions that establish a scale between Euler Totient and Möbius function. Applying arithmetic properties of Ramanujan sums and integers in cyclotomic fields, we determine for any integer n the distribution of the $2^{[(n-1)/2]}$ sums $\pm 1 \pm 2 \cdots \pm [(n-1)/2]$ modulo n and the distribution of the $2^{\phi(n)/2}$ sums $\pm 1 \cdots \pm i \cdots \pm i(n)$ (the terms i are all the invertibles from 1 to $[(n-1)/2]$) modulo n. In particular the cases, where n is odd or where n is a power of 2 give interesting perfect equidistribution results.

A discrete limit theorem for the Mellin transform of the Riemann zeta-function in the space of meromorphic functions

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A discrete limit theorem in the sense of weak convergence of probability measures in the space of meromorphic functions for the modified Mellin transform of the square of the Riemann zeta-function is proved.

Quadratic, Cubic and higher order residues : new formulae and asymptotics.

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In this talk, I tackle the question of the enumeration of residues of order m in Z/nZ. I give new formulae and their asymptotics. I also give some explicit Laurent or Dirichlet generating functions.

Generating Functions for Markoff-Hurwitz Congruences

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Let p be a rational prime and $N_{p^k}(a)$ denote the number of solutions of the congruence

$$x_1^2 + \cdots + x_n^2 \equiv ax_1 \cdots x_n \pmod{p^k}.$$

For odd $n \geq 3$ we obtain the explicit formulas for $N_{p^k}(a)$ and construct the Poincaré series $\sum_{k=0}^{\infty} N_{p^k}(a)t^k$.

On the resolution of binomial Thue equations

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In this talk we consider the Diophantine equation

$$|Ax^n - By^n| = C \tag{5.1}$$

in integers x, y and $n \geq 3$. We present some recent results extending the work of Győry and Pintér (2007) in which they initiated a systematic treatment for solving equation (1) for bounded positive integer coefficients A, B and C. Under some reasonable assumptions, for a collection of coefficients A, B, C we explicitly solve (1) in integers x, y and n with $|xy| > 1,\ n \geq 3$. Our method combines a wide variety of powerful techniques, and gives among others all solutions (x, y, n) for $C = 1,\ A, B \leq 50$, and for $A = C = 1,\ B \leq 400$.

Unimodalité des rails du triangle et de la pyramide de Pascal

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Dans le triangle de Pascal, injecté dans $\mathbb{Z} \times \mathbb{Z}$ complété par des zéros, à chaque fois que l'on prend deux points, on montre que la suite issue de la droite passant par ces deux points est unimodale. On étend ce résultat aux droites passant par deux points de la pyramide de Pascal.

Sur une propriété des polynômes de Stirling

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Dans cette communication, nous montrons comment un récent résultat de J-L. Chabert (2007) nous a permis de répondre positivement à une question posée en 1960 par D.S. Mitrinovic et R.S. Mitrinovic et restée jusque là sans réponse. Plus précisément, nous prouvons que si $(s(n,k))$ et (M_k) désignent respectivement la famille des nombres de Stirling de première espèce et la suite des nombres de Minkowski (répertoriée A053657 dans l'OEIS), alors, $M_k * s(n, n-k) = ((-1)^k)(n^{(1+mod(k,2))})(n-1)...(n-k)P_k(n)$, $(P_k(x))$ étant une suite de polynômes primitifs à coefficients entiers telle que pour tout $k > 1$, $P_{2k+1}(x) - P_{2k}(x)$ est divisible par x^2.

Effective results for points on certain subvarieties of tori

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Choose an algebraic closure $\overline{\mathbb{Q}}$ of $\mathbb{Q}$. Recall that the group of $\overline{\mathbb{Q}}$-rational points of the N-dimensional torus is

$$\mathbb{G}_m^N(\overline{\mathbb{Q}}) = (\overline{\mathbb{Q}}^*)^N = \{\mathbf{x} = (x_1, \ldots, x_N) : x_i \in \overline{\mathbb{Q}}^* \text{ for } i = 1, \ldots, N\}$$

with coordinatewise multiplication, i.e., if $\mathbf{x} = (x_1, \ldots, x_N)$, $\mathbf{y} = (y_1, \ldots, y_N)$ then $\mathbf{xy} = (x_1y_1, \ldots, x_Ny_N)$. Denote by $h(x)$ the absolute logarithmic Weil height of $x \in \overline{\mathbb{Q}}$. Define the height and degree of $\mathbf{x} = (x_1, \ldots, x_N) \in (\overline{\mathbb{Q}}^*)^N$ by $h(\mathbf{x}) := \sum_{i=1}^N h(x_i)$, and $[\mathbb{Q}(x_1, \ldots, x_N) : \mathbb{Q}]$, respectively. Let $\mathcal{X}$ be an algebraic subvariety of $(\overline{\mathbb{Q}}^*)^N$ (i.e., the set of common zeros in $(\overline{\mathbb{Q}}^*)^N$ of a set of polynomials in $\overline{\mathbb{Q}}[X_1, \ldots, X_N]$), and Γ a finitely generated subgroup of $(\overline{\mathbb{Q}}^*)^N$. We want to study the intersection of $\mathcal{X}$ with any of the sets

$$\overline{\Gamma} := \Big\{\mathbf{x} \in (\overline{\mathbb{Q}}^*)^N : \exists m \in \mathbb{Z}_{>0} \text{ with } \mathbf{x}^m \in \Gamma\Big\} \quad \text{(the division group of } \Gamma),$$
$$\overline{\Gamma}_\varepsilon := \Big\{\mathbf{x} \in (\overline{\mathbb{Q}}^*)^N : \exists \mathbf{y}, \mathbf{z} \in (\overline{\mathbb{Q}}^*)^N \text{ with } \mathbf{x} = \mathbf{yz},\ \mathbf{y} \in \overline{\Gamma},\ h(\mathbf{z}) < \varepsilon\Big\},$$
$$C(\overline{\Gamma}, \varepsilon) := \Big\{\mathbf{x} \in (\overline{\mathbb{Q}}^*)^N : \exists \mathbf{y}, \mathbf{z} \in (\overline{\mathbb{Q}}^*)^N \text{ with } \mathbf{x} = \mathbf{yz},\ \mathbf{y} \in \overline{\Gamma},\ h(\mathbf{z}) < \varepsilon(1 + h(\mathbf{y}))\Big\},$$

where $\varepsilon > 0$.

We derive effective results for certain special classes of varieties $\mathcal{X}$. The classes of varieties we consider are such that they allow an application of logarithmic forms estimates. More precisely, we consider varieties in $(\overline{\mathbb{Q}}^*)^N$ given by equations $f_1(\mathbf{x}) = 0, \ldots, f_m(\mathbf{x}) = 0$ where each polynomial f_i is a binomial or trinomial.

Fonctions zeta d'Epstein et dilogarithme de Bloch et Wigner

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Désignons par $\zeta_Q(s)$ la fonction zéta d'Epstein associée à la forme quadratique Q. Une conjecture de Zagier dit que si Q est une forme quadratique binaire définie positive à coefficients rationnels et m un entier supérieur à 2, alors $Z_Q(m) = \mid \mathrm{disc}(Q) \mid^{-1/2} \mathrm{pi}^{-m} \zeta_Q(m)$ est une combinaison $\mathbb{Q}$-linéaire de valeurs du m-ième polylogarithme en des nombres algébriques. Nous montrons ici que certaines combinaisons $\mathbb{Q}$-linéaires de $Z_Q(2)$ s'expriment en fonction du dilogarithme de Bloch et Wigner d'un nombre algébrique.

Irreducibility criterion for elliptic Galois representations

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Let K be a number field and let E be an elliptic curve defined over K. If E is non-CM then, for almost all prime numbers p the action of the absolute Galois group of K on p-torsion points of E is irreducible. In this talk, we state an algorithm which allows us to prove this result in a quite effective way (at least when the degree of K over $\mathbb{Q}$ is odd).

Soient K un corps de nombres et E une courbe elliptique définie sur K. Si E est sans multiplication complexe, alors l'action du groupe de Galois absolu de K sur les points de p-torsion de E est irréductible pour presque tout nombre premier p. Dans cet exposé, on présente un algorithme permettant de démontrer ce résultat de façon tout à fait effective (au moins dans le cas où le degré de K sur $\mathbb{Q}$ est impair).

Two-sided generalization of the continued fraction.

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Let in a three-dimensional real space two forms be given : a linear form and a quadratic one which is a product of two complex conjugate linear forms. Their root sets are a plane and a straight line correspondingly. We assume that the line does not lie in the plane. Voronoi (1896) and authors (2005) proposed two different algorithms for computation of integer points giving the best approximations to roots of these two forms. The both algorithms are one-side : the Voronoi algorithms is directed to the plane and the authors algorithm is directed to the line.

Here we propose an algorithm, which works in both directions. We give also examples of two-sided computations by means of the new algorithm.

This is a joint work with V. Parusnikov. Supported by RFBR (08-01-00082 and 09-01-00291) Bagdazaryan.

Sur l'ordre d'annulation à l'infini des formes quasi-modulaires de Drinfeld

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Soit $\mathbb{C}[E_2, E_4, E_6]$ l'algèbre engendrée par les formes quasi-modulaires, où E_2, E_4, E_6 sont les séries d'Eisenstein de poids 2, 4 et 6. Grâce à des estimations pour l'ordre d'annulation à l'infini des formes quasi-modulaires, on sait qu'une telle forme de poids w et de degré l par rapport à E_2 est entièrement déterminée par les N premiers coefficients de son développement de Fourier, où $N = N(w, l)$ est une fonction explicite de w et l.

Dans cet exposé, on s'intéressera au problème analogue – en caractéristique positive – pour les formes quasi-modulaires de Drinfeld. Il s'avère que le problème semble bien plus difficile qu'en caractéristique nulle. On présentera dans cet exposé les résultats partiels qui ont été obtenus dans un travail en collaboration avec F. Pellarin.

A Valuation Criterion for Normal Basis Generators of Hopf-Galois Extensions

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Let L/K be a finite Galois extension of local fields of characteristic $p > 0$, with perfect residue fields. G. Elder (generalising a result of L. Thomas) showed that there is an integer b such that any element of L of valuation b generates a normal basis of L/K if and only if L/K is totally ramified and of p-power degree. We present here a generalisation of this from Galois extensions to Hopf-Galois extensions. This leads to a slight strengthening of the result even for Galois extensions (in the classical sense) : we may start with a finite extension of (not necessarily complete) discrete valuation rings S/R of characteristic p, and we no longer require the residue fields to be perfect.

On the structure of rational points close to a curve

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The question of counting rational points close to a curve occurs in different problems, especially when studying the distribution of squarefree numbers. Numerical computations reveal that the density of such points can be very high when they cluster together along a fractional linear transformation. Following Huxley, we name these patterns major arcs, and give a new upper bound of the number of rational points, to which major arcs do not contribute significantly.

Asymptotic Expansion of Mahler measure

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For $P(x, y)$ a polynomial with complex coefficients, let $P_n(x) = P(x, x^n)$. Boyd showed that $m(P)$, the logarithmic Mahler measure of P, is the limit of $m(P_n)$ as n tends to infinity. We will investigate this relationship further by examining the asymptotic expansion of $m(P_n)$ in powers of $1/n$. For some simple polynomials (such as $x + y + 1$), we can state the series explicitly ; the coefficients involve polylogarithms.

On the Selberg integral of the k-divisor function and the 2k-th moment of the Riemann zeta function

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We deeply appreciate the papers of Ivić on the links between the 2k-th moments of the Riemann zeta function and, say, d_k, the k-divisor function. More specifically, both the one bounding the 2k-th moment with a simple average of correlations of the d_k (Palanga 1996 Conference Proceedings) and the more recent (to appear on 'Journal de Theorie des Nombres de Bordeaux'), which bounds the Selberg integral of d_k applying the 2k-th moment of the zeta. Building on the former paper, we apply an elementary approach (based on arithmetic averages) in order to get information on the reverse link to the second work.

Factorisation avec des courbes de genre 2

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L'algorithme ECM (Elliptic curve method) introduit par Lenstra dans les années 1980 est un algorithme probabiliste permettant de trouver des facteurs pas trop gros d'un nombre entier. Son intérêt est que sa complexité dépend peu de la taille du nombre à factoriser mais de la taille de ses facteurs. Il est possible de généraliser cet algorithme en utilisant des courbes de genre 2 au lieu des courbes elliptiques. Cependant, en général, l'algorithme obtenu est moins efficace car la probabilité de succès est moins bonne et parce que l'arithmétique est plus lente. Nous devons alors utiliser des courbes particulières dont les jacobiennes sont isomorphes au produit de deux courbes elliptiques. Après avoir présenté rapidement l'algorithme ECM et sa généralisation avec des courbes hyperelliptiques, j'introduirai les courbes décomposables. Finalement je présenterai les surfaces de Kummer qui permettent d'accélérer l'arithmétique.

Using intersection theory for studying algebraic–geometric codes
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Error–correcting codes are used in information theory when a message has to be sent across a noisy channel. By definition, a (linear) error-correcting is a vector subspace of $\mathbb{F}_q^n$. Two important parameters are related to such a *code* : its dimension as a vector space over $\mathbb{F}_q$ and its *minimum distance*, which is the minimal number of nonzero coordinates of a nonzero vector of it. In general, the estimate of the minimum distance is a very hard problem.

Since the beginning of the 80's and after the works of Goppa et al., one knows how to construct error–correcting codes using algebraic curves over a finite field. For such codes, one can bound the minimum distance using some elementary notion of arithmetic of function fields. Afterwards, Goppa's construction has been generalised to higher dimensional varieties. For such codes, finding a relevant lower bound for the minimum distance is still a very difficult problem.

In this talk, we focus on the dual of an algebraic–geometric code on a surface X and present a method for bounding its minimum distance using intersection numbers of divisors on X. This approach is based on the use of differential 2–forms on X and the group $\mathrm{Num}_{\mathbb{F}_q}(X)$, which is a discrete quotient of the arithmetical Picard group of X describing the behaviour of its divisors in terms of intersection theory.

Domaine maximal de prolongement méromorphe d'un produit eulérien et applications.
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Les produits eulériens constituent une sous-classe de la classe des séries de Dirichlet qui jouent un rôle important en mathématiques. L'étude de prolongements méromorphes de ces produits permet par exemple, grâce à des outils analytiques, d'obtenir des informations en arithmétique ou en théorie des groupes.

Lors de cet exposé, j'expliquerai tout d'abord comment prolonger de façon méromorphe un produit eulérien associé à un polynôme de plusieurs variables à un certain domaine en précisant la nature des éventuels pôles ou singularités qui apparaissent.

Le travail consistera ensuite à vérifier si le domaine de prolongement méromorphe préalablement établi est maximal ; c'est à dire s'il peut exister ou non un prolongement au voisinage d'un point de la frontière de ce domaine (dans la négative, on parlera de frontière naturelle).

Ce travail constitue une première étape vers la résolution de la conjecture de Rudnick et de Du Sautoy sur le domaine de méromorphie maximal d'une classe de produits eulériens associés au comptage des sous groupes d'un groupe donné.

Diophantine sets of polynomials over a number field
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Hilbert's Tenth Problem asks for an algorithm which, given a polynomial $f \in \mathbb{Z}[t_1, \ldots, t_n]$, answers whether or not f has a zero over $\mathbb{Z}$. In 1970, this problem has been solved negatively (there is no such algorithm) by Y. Matiyasevich, building on earlier work by M. Davis, H. Putnam and J. Robinson. They actually proved the much stronger result that recursively enumerable sets are diophantine for $\mathbb{Z}$.

This can be generalized to other rings. We show that recursively enumerable sets are diophantine for one-variable polynomial rings over a number field. The proof uses only elementary arithmetic.

Non annulation des fonctions L automorphes au point central
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Les travaux sur les formes modulaires sont nombreux et divers ; concernant leurs annulations Michel, Kowalski et Vanderkam montrent (en autre) qu'il existe une proportion positive des formes qui ne s'annulent pas au point critique. Ce résultat fut montré par ces derniers pour des formes de niveau premier ; d'autre part Iwaniec, Luo et Sarnak montrent que ceci se généralise aux formes dont le niveau est sans facteur carré. Dans le but de comprendre l'influence de l'arithmétique du niveau sur les zéros de ces formes, cet article présente une étude de la généralisation aux formes primitives dont le niveau est la puissance d'un nombre premier.

Points rationnels dans les espaces homogenes de groupes reductifs definis sur certains corps de dimension cohomologique egale a deux.
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L'objet de l'exposé est d'étudier l'existence de points rationnels dans les espaces homogènes de groupes, par exemple semi-simples simplement connexes, dont les stabilisateurs sont aussi semi-simples et plus généralement réductifs, sur certains corps de dimension cohomologique 2. Cet exposé s'inscrit dans la lignée des travaux de Borovoi, Colliot-Thélène, Gille et Parimala. Nous montrons, en particulier, que si K est un corps de fonctions sur un corps PAC, alors tout espace homogène d'un groupe semi-simple simplement connexe dont les stabilisateurs sont semi-simples admet un point K-rationnel. Les hypothéses peuvent être affaiblies dans certains cas et ramenées à la réductivite. Nous montrerons aussi que, si K est un corps de fonctions sur un corps PAC et si X est une K-variété lisse projective qui est un espace homogène d'un K-groupe lineaire, alors le principe de Hasse vaut pour X.

Strong Diophantine triples

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We describe two constructions of infinitely many triples a, b, c of non-zero rationals with the property that a^2+1, b^2+1, c^2+1, $ab+1$, $ac+1$ and $bc+1$ are perfect squares.

Galois scaffolding for Galois module structure

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A Galois scaffold, in a totally ramified p-extension of local fields, is a modification of the normal basis that allows the valuation of an element expressed in terms of this Galois scaffold to be easily determined. As a result, it is useful for addressing questions in integral Galois module structure. We will give several classes of extension for which a Galois scaffold exists. In joint work with N. Byott, we use these Galois scaffolds to determine necessary and sufficient conditions for the ring of integers to be free over its associated order.

Discrépance quadratique d'ensembles plans

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Dans cette communication, nous donnerons un aperçu des nouveaux résultats obtenus pour la discrépance quadratique de diverses généralisations des ensembles plans de Hammersley. Ces ensembles peuvent être considérés comme des versions finies de suites de van der Corput généralisées. Ils permettent d'atteindre l'ordre exact pour la discrépance quadratique – $(\log N)^{0.5}$ d'après la borne inférieure de Roth – alors que pour les ensembles de Hammersley on a seulement $\log N$.

Références.

– H. Faure and F. Pillichshammer : L_p discrepancy of generalized two-dimensional Hammersley point sets, version online. To appear in Monatsh. Math., 2009.
– H. Faure and F. Pillichshammer : L_2 discrepancy of two-dimensional digitally shifted Hammersley point sets in base b. To appear in *Monte Carlo and Quasi-Monte Carlo Methods 2008*, P. L'Ecuyer and A. Owen (eds.), Springer, 2009.
– H. Faure, F. Pillichshammer, G. Pirsic and W. Ch. Schmid : L_2 discrepancy of generalized two-dimensional Hammersley point sets by means of permutations. To appear in Acta Arithmetica.
– K.F. Roth : On irregularities of distribution. Mathematika **1** : 73–79, 1954.

Computing isogenies of elliptic curves in small characteristic

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Let E be an elliptic curve, the problem of finding explicit formulae expressing an isogeny to another elliptic curve E' has been studied by many. Vélu gave formulae for the case where E is defined over $\mathbb{C}$; these formulae have been extended in works by Morain, Atkin and Charlap, Coley & Robbins to compute isogenies in the case where the characteristic of the field is larger than the degree of the isogeny.

The small characteristic case requires a different treatment. Algorithms by Couveignes, Lercier, Joux & Lercier, Lercier & Sirvent give solutions to different instances of the problem. We review these different strategies, then we present an improved algorithm based over Couveignes' ideas and we compare its performance to the other ones.

There are only finitely many $D(4)$-quintuples

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A set of m positive integers is called a $D(4)$-m-tuple, if the product of any two of its distinct elements increased by 4 is a perfect square. There is a conjecture that $D(4)$-triple $\{a, b, c\}$ can be extended to a $D(4)$-quadruple $\{a, b, c, d\}$ such that $d > \max\{a, b, c\}$ in the unique way. That was proved for $D(4)$-triple $\{1, 5, 12\}$ and various parametric families of $D(4)$-triples. The author have proven that there does not exist a $D(4)$-sextuple. In this talk we improve that result by showing that there are only finitely many $D(4)$-quintuples.

Prime number races with two competitors

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The distribution of prime numbers in arithmetic progressions seems quite natural at first glance since by the prime number theorem they are equidistributed in the progressions $\pmod q$, but a deeper investigation reveals some unexpected phenomena. In fact, as Chebyshev remarqued in the 19th century, there is a certain bias in this distribution. Rubinstein and Sarnak gave a framework to study these questions, this is our starting point. We will study the different biases in the distribution of the prime numbers $\pmod q$, in particular we will derive an asymptotic formula which leads to great predictions, both theoritical and computationnal.

Weber's Class Number Problem
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Gauss predicted that there are infinitely many real quadratic fields with class number one. This is still an open problem. It is also unknown whether there are infinitely many number fields with class number one. More than one hundred years ago, Weber investigated the class number h_n of $\mathbb{Q}(2\cos(2\pi/2^{n+2}))$ and proved that h_n is odd for all $n \geq 1$, namely, the even part of h_n is trivial for all $n \geq 1$.

K. Horie and M. Horie have been studying the odd part of h_n. The following is a part of their results.

– Let ℓ be a prime number satisfying $\ell \equiv \pm 3 \pmod 8$. Then ℓ does not divide h_n for all $n \geq 1$.

We are also studying the odd part of h_n. Our main results are as follows :

– Let ℓ be a prime number satisfying $\ell \equiv \pm 9 \pmod{16}$. Then ℓ does not divide h_n for all $n \geq 1$.
– Let ℓ be a prime number less than 120000000. Then ℓ does not divide h_n for all $n \geq 1$.

In our talk, we will explain both theoretical and computational aspects of Weber's class number problem.

Diophantine equations over global function fields.
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Let $k = \mathbb{F}_q$ be a finite field with $q = p^d$ elements, let $k(t) \subset K$ be a finite extension, denote by O_K the integral closure of $k[t]$ in K. Let V be the set of all (exponential) valuations of K and let S be a finite subset of V containing the infinite valuations.

We give an efficient alforithm for completely solving S-unit equations in *two variables* and in *several variables* over K. Since in characteristic p $x + y = 1$ implies $x^p + y^p = 1$, these equations might have infinitely many solutions despite of the number field case.

Our methods for solving S unit equations are used to solve completely Thue equations, certain norm form equations and resultant type equations over global function fields.

On generators in Galois cohomology and class groups of cyclotomic fields
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I will report on a joint work with Cornelius Greither. We found an explicit way of covering certain Galois cohomology group by generalised symbols which are integral elements. The cohomology group is closely related to an eigenpart of the class group of the p-th cyclotomic field (which shall be a cyclic group according to the cyclicity conjecture of Iwasawa). The paper will appear in Math. Res. Letters.

Lemmes de Siegel généralisés.

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En transcendance un lemme de Siegel est un énoncé qui garantit l'existence d'un vecteur x non nul et de petite hauteur dans un espace vectoriel donné E (sur un corps de nombres). Nous expliquerons comment il est possible de choisir x en dehors d'un nombre fini de sous-espaces stricts de E. Les résultats s'appuient sur des théorèmes de géométrie des nombres adélique. The talk will be given in French.

On linear forms of a given Diophantine type

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The talk is devoted to our joint paper [1] with Moshchevitin concerning Diophantine approximations for linear forms, similar to the following result concerning simultaneous best approximations obtained in [2] :

Theorem (Akhunzhanov and Moshchevitin, 2006). *For each positive integer m there are explicit positive constants A_m, B_m with the following property. Let $\psi(p) : \mathbb{R}_+ \to \mathbb{R}_+$ be an arbitrary non-increasing function and let $\psi(1) \leq A_m$. Then there is an uncountable set of vectors $\alpha = (\alpha_1, \ldots, \alpha_m) \in \mathbb{R}^m$, such that for all $p \in \mathbb{Z}_+$*

$$\max_{1\leq i\leq m} ||p\alpha_i|| \geq \frac{\psi(p)}{p^{1/m}} \left(1 - B_m\psi(p)\right),$$

but the inequality

$$\max_{1\leq i\leq m} ||p\alpha_i|| \leq \frac{\psi(p)}{p^{1/m}} \left(1 + B_m\psi(p)\right)$$

has infinitely many solutions in positive integers p.

Our result concerns the "dual" problem, which is approximating zero with the values of a linear form at integer points. For reasons of simplicity we give our result in the three-dimensional case :

Theorem (German and Moshchevitin, 2008). *There are explicit positive constants A, B with the following property. Given an arbitrary non-increasing function $\psi : \mathbb{R}_+ \to \mathbb{R}_+$, $\psi(1) \leq A$, one can find an uncountable set of $\alpha \in \mathbb{R}^2$, such that for all $\mathbf{x} \in \mathbb{Z}^2 \setminus \{\mathbf{0}\}$*

$$\|\langle\alpha, \mathbf{x}\rangle\| \geq \frac{\psi(|\mathbf{x}|)}{|\mathbf{x}|^2}(1 - B\psi(|\mathbf{x}|))$$

but the inequality

$$\|\langle\alpha, \mathbf{x}\rangle\| \leq \frac{\psi(|\mathbf{x}|)}{|\mathbf{x}|^2}(1 + B\psi(|\mathbf{x}|))$$

has infinitely many solutions in $\mathbf{x} \in \mathbb{Z}^2$.

References

[1] German O. N., Moshchevitin N. G., *On linear forms of a given Diophantine type*, arXiv :0812.4896.

[2] Akhunzhanov R. K., Moshchevitin N. G., *Vectors of given Diophantine type*, Math. Notes **80** :3 (2006), 318–328.

A general probabilistic interpretation of Benford's Law in terms of Markov chains

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For a given a density f on $[0,1]$, we construct a Markov chain (M_n) such that M_{n+1} conditioned on M_n follows the law of the mantissa of a random variable having density $M_n f$. Benford's law is shown to be the unique invariant probability measure for this Markov chain, and the speed of convergence of the law of M_n to Benford's law is obtained. This Markov chain is used to give a probabilistic proof of a result that generalizes the celebrated Flehinger's theorem about the initial digit of a random integer, together with the speed of convergence (Joint work with Elise Janvresse).

The Catenary Degree of Krull Monoids

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In a Krull Monoid H, given two factorizations z and z' of the same non-unit a into products of atoms (irreducible elements), one may wish to know if z can be 'slowly' modified until it is transformed into the factorization z', that is, does there exist a finite sequence $(z_0, \ldots, z_s)$ of factorizations of a such that each z_i is obtained from z_{i-1} by replacing only a small number of atoms from z_{i-1}, at most $C \in \mathbb{N}_0$, with another small number of atoms, again at most C. The minimal $C \in \mathbb{N}_0 \cup \{\infty\}$ for which this is always possible is known as the catenary degree $\mathsf{c}(H)$, and it is an important constant controlling the behavior of non-unique factorizations. By established transfer techniques, the determination of $\mathsf{c}(H)$ is known to be reduced to the study of the Block Monoid of zero-sum subsequences over the class group G (or the subset thereof of all classes containing a prime), and the catenary degree for this special monoid is abbreviated by $\mathsf{c}(G)$.

Another well studied quantity occurring in the study of non-unique factorizations is the set of consecutive distances $\Delta(H)$, which is the set of all non-zero integers x for which there exist factorizations z and z' of some non-unit a such that $x = |z| - |z'| > 0$ is equal to the difference in lengths of the factorizations z and z' but a has no factorization of length strictly between $|z|$ and $|z'|$. As with the catenary degree, the study of $\Delta(H)$ is known to reduce to consideration of the Block Monoid, and in this case is denoted $\Delta(G)$.

It is know that $\max \Delta(G)+2 \leq \mathsf{c}(G)$ is a lower bound for the catenary degree. In this talk, we present work showing that, in a large class of finite abelian groups $G = C_{n_1} \oplus \ldots C_{n_r}$, where $n_1 | \ldots | n_r$ and $|G| \geq 3$, including all those G for which the Davenport Constant $\mathsf{D}(G)$ attains the trivial lower bound $\mathsf{d}^*(G) = \sum_{i=1}^{r}(n_i - 1) + 1$ (which include all p-groups and groups of rank at most 2), we in fact have the equality

$$\max \Delta(G) + 2 = \mathsf{c}(G),$$

thus linking the two constants together. We also present some new upper bounds for $\mathsf{c}(G)$ in the rank two case.

Modular Abelian Varieties over Number Fields

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We will give a characterization of the abelian varieties over number fields B/K such that the zeta function $L(B/K; s)$ is equivalent to a product of zeta functions of classical elliptic modular forms over $\mathbb{Q}$.

Perfect powers in arithmetic progression

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We consider the diophantine equation

$$x(x+d)...(x+(k-1)d) = by^n \tag{1}$$

in positive integers x, d, k, b, y, n with $k, n \geq 2$, $\gcd(x, d) = 1$ and $P(b) \leq k$. Here $P(u)$ stands for the greatest prime factor of u if $u > 1$ is an integer, and $P(1) = 1$.

The literature of equation (1) is extremely rich. In the talk we give a brief overview of the topic and present some new results, focusing on the following theorem. Extending previous works of Győry, Saradha, Bennett, Bruin and Hajdu, as a joint result with Győry and Pintér we proved that equation (1) has no solutions for $n \geq 5$ and $12 \leq k \leq 34$. As a corollary of this result and the mentioned ones, and theorems of Hirata-Kohno, Laishram, Shorey and Tijdeman (case $n = 2$) and Hajdu, Tengely and Tijdeman (case $n = 3$) we obtain that for any k with $3 < k < 35$ the product of k consecutive terms of a positive, primitive arithmetic progression is never a perfect power.

Infinite Barker Series
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We say a polynomial $p(z) = a_n z^n + a_{n-1} z^{n-1} + \cdots + a_0$ is a *Littlewood polynomial* if $a_k = \pm 1$ for $0 \leq k \leq n$. Let $p(z)p(1/z) = c_n z^n + c_{n-1} z^{n-1} + \cdots + c_{-n} z^{-n}$. It is easy to show that $c_0 = n + 1$. We say that $p(z)$ is a *Barker polynomial* if $|c_k| \leq 1$ for $k \neq 0$. There are only 8 known Barker polynomials (normalized to have $a_n = a_{n-1} = 1$). There are many results known about the existence and non-existence of Barker polynomials for various degrees. This talk deals with the infinite case, when $f(z) = \pm 1 \pm z \pm z^2 \pm \cdots$ is a power series with ± 1 coefficients. We give a complete description of all Barker series.

The order of an asymptotic basis
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If a finite set of elements is removed from an asymptotic basis for N, then it can happen that what is left is still an asymptotic basis, but of a higher order. Let $X(k,h)$ denote the maximum possible order of $A - X$, where A is an asymptotic basis of order h and X is a finite subset of A of size k, such that $A - X$ is still an asymptotic basis. The function $X(k,h)$ has been studied extensively for 30 years, but a satisfactory understanding of it remains elusive and is apparently connected to some fundamental open problems in additive number theory, namely the structure of infinite subsets of N with 'small doubling' plus the so-called 'postage stamp problem'. I will present an overview of what is known, including some recent upper bounds provided by Farhi and our own improvements of them.

A reciprocal relation between cyclotomic fields
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We establish a reciprocal relation between the factorization of certain types of cyclotomic integers depending of two prime numbers p, q in the cyclotomic field of the p-th roots of unity over the rational field, and the factorization of the cyclotomic integers obtained by exchanging p and q in the cyclotomic field of the q-th roots of unity.

Fibonacci numbers which are sums of three factorials

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Let $(F_n)_{n\geq 0}$ be the Fibonacci sequence given by $F_0 = 0,\ F_1 = 1$ and $F_{n+2} = F_{n+1} + F_n$ for all $n \geq 0$. Recently, Grossman and Luca have shown that if $k \geq 1$ is any fixed positive integer, then the Diophantine equation

$$F_n = m_1! + m_2! + \cdots + m_k! \tag{5.2}$$

has at most finitely many effectively computable positive integer solutions

$$(n, m_1, \ldots, m_k).$$

In this talk we will give the positive solutions to the case $k = 3$. This result is a joint work with M. Bollman and F. Luca.

On the independence of $\sigma(\phi(n))$ and $\phi(\sigma(n))$

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Let be ϕ and σ the Euler function and sum of divisors function respectively. In this talk, we show that the compositions $\sigma \circ \phi$ and $\phi \circ \sigma$ are independent in the following sense : for every positive integer k and any two permutations $i_1, \ldots, i_k$ and $j_1, \ldots, j_k$ of $\{1, \ldots, k\}$, there exist infinitely many positive integers n such that

$$\sigma(\phi(n + i_1)) < \sigma(\phi(n + i_2)) < \cdots < \sigma(\phi(n + i_k)),$$

while

$$\phi(\sigma(n + j_1)) > \phi(\sigma(n + j_2)) > \cdots > \phi(\sigma(n + j_k)).$$

Solving a family of quartic Thue inequalities using continued fractions

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We apply the method of Tzanakis for solving Thue equations $f(x, y) = m$. We use results of Worley, Dujella and Ibrahimpašić, concerning Diophantine approximations of the form $|\alpha - p/q| < k/q^2$, for a positive real number k, to find the values of m for which mentioned Thue equations has solutions.

A property of preperiodic points

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Some classical Diophantine results will briefly be recalled. Then I will describe an analogous property of preperiodic points on dynamical systems.

Establishing the minimal index in a parametric family of bicyclic biquadratic fields

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Let $c \geq 3$ be a positive integer such that c, $4c+1$, $c-1$ are square-free integers relatively prime in pairs. We find minimal index and determine all elements with minimal index in the bicyclic biquadratic field $K = \mathbb{Q}\left(\sqrt{(4c+1)\,c}, \sqrt{(c-1)\,c}\right)$.

Mertens' Theorem for Arithmetical Dynamical Systems

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Mertens' Theorem of analytic number theory has a dynamical analogue giving asymptotics for weighted averages of numbers of closed orbits. The simplest example is the circle-doubling map $T : x \mapsto 2x \mod 1$ on $\mathbb{T}$, which has $\sum_{n \leq N} \frac{O_T(n)}{2^n} = \log N + C + O(1/N)$ where $O_T(n)$ denotes the number of closed orbits of length n under T. This map is the simplest of an uncountable family of examples of maps T_S where S is any subset of the rational primes. The map T_S is dual to $x \mapsto 2x$ on $R_S = \{r \in \mathbb{Q} : |r|_p \leq 1 \text{ for all } p \notin S \cup \{\infty\}\}$, the ring of S-integers.

Everest, Miles, Steven, and Ward showed that if S is a finite set, then $\sum_{n \leq N} \frac{O_{T_S}(n)}{2^n} = k_S \log N + C_S + O(1/N)$ for constants $k_S \in \mathbb{Q}$, C_S. We construct infinite sets of primes S (with infinite complements) using arithmetic criteria for which $\sum_{n \leq N} \frac{O_{T_S}(n)}{2^n} = k_S \log N + C_S + O(1/N)$ with $k_S \geq \frac{1}{2}$. These examples are surprising because the map T_S has infinitely many p-adic eigendirections (corresponding to elements of S) in which it behaves like an irrational rotation.

The Vostokov-Brueckner Formula for Higher Local Fields

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The Vostokov-Brückner formula describes the Hilbert symbol for higher dimensional local fields. We use T. Scholl's construction of the field of norms functor to relate Kummer theory to Artin-Schreier-Witt theory and deduce the Vostokov-Brückner formula from the explicit reciprocity law in finite characteristic. The only known general proof of this formula was obtained by K. Kato (1985) and is based on very advanced techniques of crystalline cohomology. For so-called standard fields, S. Zerbes recently deduced the formula using $\varphi - \Gamma$-modules.

Differentiability of the Minkowski question mark function

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The talk is devoted to our joint work with A. Dushistova and N. Moshchevitin and concerns the Minkowski question mark function $?(x)$, which is defined as follows. The values $?(0)$ and $?(1)$ are set to be 0 and 1, correspondingly. If the values $?(p/q)$ and $?(p'/q')$ are defined for consecutive Farey fractions p/q, p'/q', then

$$?\left(\frac{p+p'}{q+q'}\right) = \frac{1}{2}\left(?\left(\frac{p}{q}\right) + ?\left(\frac{p'}{q'}\right)\right).$$

For irrational $x \in [0,1]$ the value of $?(x)$ is defined by continuity arguments.

Let us also denote by $S_x(t)$ the sum of the first t partial quotients of a number x.

J. Paradis, P. Viader and L. Bibiloni proved that if for an irrational $x \in (0,1)$ $?'(x)$ exists and $\overline{\lim}_{t\to\infty} \frac{S_x(t)}{t} < \kappa_1 = 2\log_2 \frac{1+\sqrt{5}}{2} = 1,388^+$, then the equality $?'(x) = +\infty$ holds.

They also proved that if for an irrational $x \in (0,1)$ $?'(x)$ exists and

$$\liminf_{t\to\infty} \frac{S_x(t)}{t} \geq \kappa_3 = 5.319^+,$$

where κ_3 is the root of the equation $2\log(1+z) = z\log 2$, then the equality $?'(x) = 0$ holds.

We obtained the following

Theorem 1.

(i) If for an irrational $x \in (0,1)$ $\overline{\lim}_{t\to\infty} \frac{S_x(t)}{t} < \kappa_1$, *then* $?'(x)$ *exists and* $?'(x) = +\infty$.

(ii) There is an irrational x*, such that* $\lim_{t\to\infty} \frac{S_x(t)}{t} = \kappa_1$ *and* $?'(x) = 0$.

(iii) If for an irrational $x \in (0,1)$ $\liminf_{t\to\infty} \frac{S_x(t)}{t} > \kappa_2 = 4.401^+$, *then* $?'(x)$ *exists and* $?'(x) = 0$.

(iv) There is an irrational x*, such that* $\lim_{t\to\infty} \frac{S_x(t)}{t} = \kappa_2$ *and* $?'(x) = +\infty$.

For numbers with bounded partial quotients we have more precise results. Let us denote by E_n, $n \geq 2$, the set of irrational numbers from the interval $(0,1)$ with partial quotients bounded by n.

Then there is a sequence of effectively computable constants κ_n, $n \geq 5$, such that $\kappa_n = \kappa_1 + O(\frac{\log n}{n})$, for which the following theorems hold.

Theorem 2.

(i) Suppose that $x \in E_n$, $n \geq 5$, and for all positive integer t

$$S_x(t) \leq \kappa_n t + C$$

with some constant C. Then $?'(x)$ exists and $?'(x) = +\infty$.

(ii) Let $\psi(t)$ be an arbitrary increasing function, such that $\lim_{t\to+\infty} \psi(t) = +\infty$. Then, given $n \geq 5$, there is an irrational $x \in E_n$, such that $?'(x)$ does not exist and for every positive integer t

$$S_x(t) \leq \kappa_n t + \psi(t).$$

Theorem 3.

(i) Suppose that $x \in E_n$, $n \geq 5$, the derivative $?'(x)$ exists and $?'(x) = 0$. Then, for t large enough,

$$\max_{u \leq t} (S_x(u) - \kappa_n u) \geq \frac{t^{1/2}}{160(n+2)^{10}}.$$

(ii) Given $n \geq 5$, there is an $x \in E_n$, such that $?'(x) = 0$ and, for t large enough,

$$S_x(t) - \kappa_n t \leq 15nt^{1/2}.$$

Theorem 4. *If $x \in E_4$, then $?'(x)$ exists and $?'(x) = +\infty$.*

On the fractional parts of the powers of algebraic numbers

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Weyl proved that an arithmetic progression is uniformly distributed modulo 1 if and only if its common difference is irrational. On the other hand, for geometric progression no criteria of uniformly distributed modulo 1 have been known so far. For example, let α be a natural number greater than 1. Borel conjectured for any algebraic irrational $\xi > 0$ that the sequence $\xi\alpha^n$ $(n = 0, 1, 2, \ldots)$ is uniformly distributed modulo 1, namely ξ is normal in base α. However, we know no such number whose normality was proved. In this talk, we introduce some partial results for the Borel conjecture. More generally, we discuss the fractional parts of geometric sequences $\xi\alpha^n$ $(n = 0, 1, 2, \ldots)$, where α, ξ are algebraic number with $\xi \notin \mathbb{Q}(\alpha)$.

Super automorphic forms on the super upper half plane

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I would like to present the theory of super automorphic forms on the upper half plane with r additional odd dimensions with respect to a parametrized lattice. Parametrization means : let the points of the lattice 'depend' on nilpotent parameters. It is needed to make sure that the lattice also reaches the odd dimensions of the super Lie group acting on the super upper half plane. I will show a method of investigating the structure of the space of super automorphic forms for high weights. This is done in two steps : First solve the problem for usual lattices and then regard the parametrized ones as local deformations.

Arithmetical properties of Fibonacci Zeta functions

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Continued fraction expansions for infinite reciprocal sums of Fibonacci and Lucas numbers (and more related series) are given. Fibonacci and Lucas Dirichlet series like

$$\sum_{n=1}^{\infty} 1/F_n^s$$

define hypertranscendental functions. Moreover, some properties of periodicity of the approximants of the series modulo positive integers are shown.

On character sum bounds in finite fields

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Theorem *Let χ be a nontrivial multiplicative character of $\mathbb{F}_{p^n}$ and $\varepsilon > 0$ be given. If $\{\omega_1, \ldots, \omega_n\}$ is an arbitrary basis for $\mathbb{F}_{p^n}$ over $\mathbb{F}_p$,*

$$B = \left\{ \sum_{j=1}^{n} x_j \omega_j \, : \, x_j \in [N_j + 1, N_j + H_j] \cap \mathbb{Z} \, (j = 1, \ldots, n) \right\} \tag{5.3}$$

is a box satisfying $H_j \geq p^{1/4+\varepsilon} \, (j = 1, \ldots, n)$, then we have

$$\left| \sum_{x \in B} \chi(x) \right| \ll_n p^{-\delta} |B|,$$

where $\delta = \delta(\varepsilon) > 0$.

Corollary *Given* $\kappa > 0$ *and* $\varepsilon > 0$*, there are a positive integer* $k = k(\kappa, \varepsilon)$ *and a constant* $c = c(n, \kappa, \varepsilon) > 0$ *such that if* B *satisfies the conditions of Theorem,* $A \subset B$*,* $|A| \geq \kappa |B|$*, then* $|A^k| \geq cp^n$*.*

The proof of Theorem is based on Chang's version of Burgess's arguments [Ch] and on the following estimate for multiplicative energy of a box.

Lemma *Let* B *be defined by (5.3). If* $H_1 = \cdots = H_n \leq p^{1/2}$ *then the equation*

$$x^1 x^2 = x^3 x^4, \quad x^1, x^2, x^3, x^4 \in B,$$

has $O_n(|B|^2 \log p)$ *solutions.*

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References

[Ch] M.-C. Chang, On a question of Davenport and Lewis and new character sum bounds in finite fields, Duke Math. J. **145** (2008), 409–442.

Combinatorial numbers in binary recurrences

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We give several effective and explicit results concerning the values of some polynomials in binary recurrence sequences. First we provide an effective finiteness theorem for certain combinatorial numbers (binomial coefficients, products of consecutive integers, power sums, alternating power sums) in binary recurrence sequences, under some assumptions. We also give an efficient algorithm (based on genus 1 curves) for determining the values of certain degree 4 polynomials in such sequences. Finally, partly by the help of this algorithm we completely determine all combinatorial numbers of the above type for the small values of the parameter involved in the Fibonacci, Lucas, Pell and Associated Pell sequences.

Atkin Lehner Involutions, Elliptic Curves and Modular Degrees.

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Let E be elliptic curve defined over $\mathbb{Q}$, of Conductor N. By modularity of elliptic curves, $\exists$ a surjective map $\Phi : X_0(N) \to E$, such that Φ doesn't factor through any other elliptic curve. Watkins conjectured that $2^R \mid \deg\Phi$,where R is the rank of the elliptic curve. This conjecture is true under certain conditions on the elliptic curve and assuming $\mathcal{R}_\phi \simeq \mathbb{T}_{\mathrm{m}}$ (the universal deformation ring $\simeq$ to completion of the Hecke ring). The map Φ factors through a subgroup W' of Atkin Lehner Involutions. So, $2^K \mid \deg\Phi$, where $|W'| = 2^K$ for some K. We showed that $2^{R+K} \mid \deg\Phi$ under similar

conditions on the elliptic curve and the assumption $\mathcal{R}_\phi \simeq \mathbb{T}_{\mathrm{m}}$. This assumption $\mathcal{R}_\phi \simeq \mathbb{T}_{\mathrm{m}}$ is true for primes $p > 2$ but we need it for $p = 2$

Green-Tao theorem in function fields

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We adapt the proof of the Green-Tao theorem on arithmetic progressions in primes to the setting of polynomials over a finite field $\mathbb{F}_q$ to show that, for every k, the irreducible polynomials in $\mathbb{F}_q[t]$ contain configurations of the form $\{f + Pg : deg(P) < k\}$, $g \neq 0$. Consequently, the monic irreducible polynomials in $\mathbb{F}_q[t]$ contain affine spaces of arbitrarily high dimension.

Groupes, corps et extensions de Polya : une question de capitulation

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Un corps de Polya est un corps de nombres dans lequel tous les produits des idéaux premiers de même norme sont des idéaux principaux. On connaît le problème du plongement d'un corps de nombres K dans une extension dont le nombre de classes est égal à 1. De façon analogue, on peut se poser la question moins forte du plongement d'un corps de nombres K dans un corps de Polya. Nous verrons en quoi le corps de classes de Hilbert répond à cette question. Ce faisant, nous introduisons et étudions la notion d'extension de Polya d'un corps K en liaison avec la capitulation de ces idéaux produits.

Recherche des sous-variétés de torsion incluses dans une variété définie par des polynômes lacunaires.

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Etant donnés $F_1, ..., F_k$ des polynômes à plusieurs variables et à coefficients entiers, comment déterminer si ces polynômes s'annulent en un point dont les coordonnés sont des racines de l'unité ? L'algorithme que nous décrirons répond à ce problème et donne également une représentation de toutes les sous-variétés de torsion incluses dans la variété définie par ces polynômes.

Stark-Heegner points over function fields

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As an approach to explicit class field theory for real quadratic fields, H. Darmon proposed to consider Stark-Heegner points, which are defined through p-adic uniformization of elliptic curves and are conjectured to be algebraic. It is possible to mimic that construction in the case of global function fields, using the uniformization of elliptic curves by Drinfeld modular curves. We will show that in this setting one can prove that the Stark-Heegner points so defined are indeed algebraic.

Noyau sauvage et sommes de Gauss

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On donnera une formule d'indice du module des somme de Gauss dans les unités semi-locales faisant intervenir l'ordre du noyau sauvage. Dans un deuxième temps, si nous avons du temps, nous relierons cet indice aux valeurs spéciales de fonctions L.

The density of integral points on hypersurfaces of degree at least four

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Let f be a polynomial of degree at least four with integer-valued coefficients. We establish new bounds for the density of integer solutions to the equation $f = 0$, using an iterated version of Heath-Brown's q-analogue of van der Corput's method of exponential sums.

Galois module structure of units in real abelian fields.

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Let E be the group of units modulo its torsion of a real abelian field N. The group E can be considered as a module over an order $A = ZG/\text{trace}(G)$, where G denotes the Galois group of the extension $N/\mathbb{Q}$. In the case E is locally free module over A, we give a representation of the class of E in the locally free class group of A. This representation uses the so called Hom description of the class group of A. Applying this representation to real tame fields of prime degree we derive necessary and sufficient conditions for N to have a Minkowski unit i.e. E is A-free. We also give new examples of fields having Minkowski units.

Sur un problème mixte d'approximation diophantienne

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Abstract : Soit d un entier positif, et soit α un nombre réel algébrique de degré $d+1$. On sait que

$$0 < \liminf_{\xi} |\alpha - \xi| H(\xi)^{d+1} < +\infty,$$

où ξ parcourt l'ensemble des nombres réels algébriques de degré au plus d. Nous montrons que si p est un nombre premier, on a

$$\liminf_{\xi} |\alpha - \xi| H(\xi)^{d+1} |N_{\mathbb{Q}(\xi)/\mathbb{Q}}(\xi)|_p = 0.$$

Une estimation plus précise est donnée, ainsi qu'un caractère d'optimalité de cette estimation.

Coefficients de Li généralisés

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Dans cet exposé, on détermine une formule asymptotique des coefficients de Li généralisés par trois méthodes différentes toutes aboutissant au même terme principal. La première utilise la fonction de comptage de zéros, la deuxième est inspirée de celle de Lagarias et la troisième utilise la méthode du col en combinaison avec la théorie des intégrales de Nörlund-Rice. Le deux dernières donnent un meilleur terme d'erreur.

On a supercongruence conjecture of Rodriguez-Villegas

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We discuss recent work concerning a conjectural supercongruence (due to Rodriguez-Villegas) between a special value of an ordinary hypergeometric series and the p-th Fourier coefficient of a modular form.

Artin-Schreier theory and the tempered dual of SL(2) over a local field with characteristic 2

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We use Artin-Schreier theory to give a description of the tempered dual of SL(2) over the field of Laurent series with coefficients in the field with two elements.

Distribution functions of ratio block sequences

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To every infinite set of positive integers it is possible to attach a nonempty set of distribution functions of its ratio block sequence. In this contribution we study relations between asymptotic densities of the original set of positive integers and bounds of the attached set of distribution functions.

Constrained ternary integers

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An integer n is said to be ternary if it is composed of three distinct odd primes. We count the number of ternary integers less than x with the prime factors satisfying various constraints and discuss an application to the study of cyclotomic and inverse cyclotomic polynomials.

Indecomposable polynomials and their spectrum.

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I address some questions concerning indecomposable polynomials and their spectrum. How does the spectrum behave via reduction or specialization, or via a more general ring morphism ? Are the indecomposability properties equivalent over a field and over its algebraic closure ? How many polynomials are decomposable over a finite field ? (Joint work with A. Bodin and P. Dèbes).

On the largest prime factor of $n^2 - 1$

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We find all integers n such that $n^2 - 1$ has only prime factors smaller than 100. This will give us some interesting corollaries. For example, for any given integer $m > 0$, we can find the largest integer x, such that $x, x+1, .., x+m$ all have prime factors less than 100.

Annihilation of ray class groups

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Let L/K be a finite abelian Galois CM-extension of number fields. A famous conjecture of Brumer predicts that a certain Stickelberger element (constructed via Artin L-functions attached to L/K) annihilates the class group of L. If K is the field of the rational numbers, this is just Stickelberger's Theorem. We discuss a generalization and strengthening of this conjecture to ray class groups wich is sometimes called the Strong Brumer Stark conjecture. But C. Greither and M. Kurihara have meanwhile constructed some counterexamples to this conjecture ; so we should talk about the Strong Brumer Stark property rather than about a conjecture. We show that this property follows from the Equivariant Tamagawa Number Conjecture in many cases and indeed can be proved in almost all of these cases.

On a lower bound for unit with application in Weber's class number problem

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Let f be a power of 2. Assume $f > 4$. Let K be the cyclic extension of conductor f over $\mathbb{Q}$. Weber conjectured the ideal class number h of K is always one. Recently, Horie, Komatsu and Fukuda made progress in possible proof of this conjecture.

Let c be a power of 2 such that $c > 2$. Let l be a prime number. They prove l does not divide h if $l \not\equiv \pm 1 \bmod 2c$ and l is larger than a number $L(c)$ determined by c. The number $L(c)$ is independent of f. They also found a way of estimating f by a function of l if l divides h. For the rest of the pairs (l, f), it is in principle possible to check if l divides h.

They did the check for small values of c by computer.

Horie's basic idea in this research depends on a lower estimate of relative units of K. Let F be the unique subfield of K whose degree is $f/8$, i.e., $[K : F] = 2$. A unit ε of K is called a relative unit of K/F if its norm to F is a roots of unity, in our case ± 1.

Therefore, a better lower bound of a relative units leads to a smaller upper bound on l and hence on f, which enables us to invesitage the problem for larger value of c. In short, it enables us to give a proof for l not to divide h under a weaker condition.

Let ε be a relative unit. In this talk, the speaker will illustrate his idea for proving that the trace of ε^2 from K to $\mathbb{Q}$ is larger than or equal to $(f-2)f/8$. This gives a striking improvement upon Kronecker's classical estimate, which Horie uses.

Une grande famille des suites pseudo-aléatoires

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Nous essayons de généraliser les examples de constructions des suites pseudo-aléatoires données par Goubin, Mauduit et Sárközy. Nous utilisons les polynômes n'ayant pas "trop" de racines afin d'estimer la mesure de bonne distribution et des correlations.

Automorphic properties of generating functions for generalized rank moments and Durfee symbols

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We define two-parameter generalizations of two combinatorial constructions of Andrews, namely the k-th symmetrized rank moment and the k-marked Durfee symbol, and prove that specializations of the associated generating functions are quasimock modular and quasimodular forms.

Conjecture de Lang-Silverman et jacobiennes hyperelliptiques

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On s'interesse a une conjecture proposant une minoration pour la hauteur de Neron-Tate sur les varietes abeliennes. On discutera du cas des jacobiennes de courbes hyperelliptiques sur un corps de nombres.

Class Number Indivisibility in Global Function Fields

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It is known that infinitely many number fields and function fields of any degree m have class number divisible by a given integer n. However, significantly less is known about the indivisibility of class numbers of such fields. In previous work, we explicitly constructed an infinite class of function fields of any degree m, 3 not dividing m, over $\mathbb{F}_q(T)$ with class number indivisible by 3, generalizing a result of Ichimura for quadratic extensions. Here we generalize that result, constructing, for an arbitrary prime ℓ, and positive integer $m > 1$, ℓ not dividing m, infinitely many function fields of degree m over the rational function field, with class number indivisible by ℓ.

Continued fractions to the nearest even number.

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There exist many types (algorithms) of one-dimensional continued fractions. Two of them are mostly used, namely, the classical regular continued fractions, and the continued fractions to the nearest integer ones. They both are based on the Euclid's algorithm.

We develop a new type of continued fractions : the continued fractions to the nearest even number. We demonstrate that continued fractions of this type possess the majority of important properties of classical continued fractions.

These continued fractions converge very slowly. We also propose a fast (short) type of even continued fractions. The modified algorithm allows to replace a sequence of similar parts of even continued fraction by one linear fractional transformation.

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On the order of the reductions of points on abelian varieties

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Let A be an abelian variety defined over a number field K. Let R be a point in $A(K)$. We study the order of $(R \pmod p)$, where p varies in the primes of K. Let l be a prime number. We characterize the non-negative integers n such that there exist infinitely many primes p of K satisfying the following property : the l-adic valuation of the order of $(R \pmod p)$ equals n. We also replace R with finitely many points.

Parametrization of integer valued polynomials
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Given a polynomial $f \in \mathbb{Q}[X]$ such that $f(\mathbb{Z}) \subset \mathbb{Z}$ (also called integer-valued polynomial), we investigate whether the set $f(\mathbb{Z})$ can be parametrized by a multivariate polynomial with integer coefficients, that is, the existence of $g \in \mathbb{Z}[X_1, \ldots, X_m]$ such that $f(\mathbb{Z}) = g(\mathbb{Z}^m)$. If this happens we say that $f(\mathbb{Z})$ is $\mathbb{Z}$-parametrizable. We give a complete classification of integer valued polynomials $f(X)$ such that $f(\mathbb{Z})$ is $\mathbb{Z}$-parametrizable. In particular it turns out that some power of 2 is a common denominator of the coefficients of f and there exists a rational β with odd numerator and odd prime-power denominator such that $f(X) = f(\beta - X)$. Moreover if $f(\mathbb{Z})$ is likewise parametrizable, then this can be done by a polynomial in one or two variables.

The Generalized Riemann Hypothesis on the Average
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We prove a generalization of the Bombieri-Vinogradov theorem for number fields.

Orders in algebraic number fields with half-factorial localizations
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The maximal order $\mathcal{O}_K$ of an algebraic number field is a Dedekind domain, and its arithmetic is completely determined by its Picard group $\mathrm{Pic}(\mathcal{O}_K)$. In particular, $\mathcal{O}_K$ is factorial if and only if its Picard group is trivial. In contrast, non-principal orders are not integrally closed, hence they are never factorial, and their arithmetic depends not only on their Picard group but also on the localizations at singular primes. A non-principal order $\mathcal{O}$ with $|\mathrm{Pic}(\mathcal{O})| \geq 3$ inherits many arithmetical properties from the maximal order. In contrast, only little is known about the arithmetic of non-principal orders whose Picard group has at most two elements, even if all localizations are half-factorial. In this case, using special saturated submonoids as tools, we are able to give a quite explicit description of various arithmetical invariants such as the elasticity $\rho(\mathcal{O})$, the minimum distance $\min \Delta(\mathcal{O})$, and the catenary degree $\mathsf{c}(\mathcal{O})$. In particular, we prove that $\rho(\mathcal{O}) \in \{1, \frac{3}{2}, 2\}$ and $\min \Delta(\mathcal{O}) \leq 1$.

Self-Dual Normal Bases for the Square-Root of the Inverse Different

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Let K be a finite extension of $\mathbb{Q}_p$, let L/K be a finite abelian Galois extension of odd degree and let O_L be the valuation ring of L. We define $A_{L/K}$ to be the unique fractional O_L-ideal with square equal to the inverse different of L/K. Combining a result of Erez with a result of Fainsilber and Morales we can see that $A_{L/K}$ admits an integral normal basis that is self-dual with respect to the trace form if and only if L/K is at most weakly ramified. For p an odd prime and $L/\mathbb{Q}_p$ contained in certain cyclotomic extensions, Erez has described such self-dual integral normal bases for $A_{L/\mathbb{Q}_p}$. Assuming $K/\mathbb{Q}_p$ to be unramified we generate odd abelian weakly ramified extensions of K using Lubin-Tate formal groups. We then use Dwork's exponential power series to explicitly construct self-dual integral normal bases for the square-root of the inverse different in these extensions. These constructions generalise Erez's results for cyclotomic extensions.

Series acceleration formulae for zeta values and their q-analogues.

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Apéry's irrationality proof of $\zeta(3)$ operates with a fast convergent series for this number first obtained by A. A. Markov in 1890. Since then, many Apéry-like formulae for other values $\zeta(n)$, $n \geq 2$, have been proved with the help of generating function identities. Using the Markov-WZ method we present simpler proofs of Koecher's, Leshchiner's, Bailey-Borwein-Bradley's and Cohen's identities for generating functions of the sequences $\{\zeta(2n+2)\}_{n\geq 0}$, $\{\zeta(2n+3)\}_{n\geq 0}$ and $\{\zeta(2n+4m+3)\}_{n,m\geq 0}$. By the same method we give several new representations for these generating functions yielding faster convergent series for values of the Riemann zeta function. Finally, we establish q-analogues of the Bailey-Borwein-Bradley identity and Markov's formula for $\zeta(3)$.

Solutions to arithmetic convolution equations

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Let $X \subseteq [0, \infty)^k$, $k \in \mathbb{N}$, be a discrete infinite additive semigroup of k-tuples $x = (x_1, \ldots, x_k)$ with $0 = (0, \ldots, 0) \in X$. The set $\mathcal{A} = \mathcal{A}(X) := \mathbb{C}^X$ of all arithmetic functions $g\colon X \to \mathbb{C}$ is a commutative complex algebra, called *Dirichlet algebra of* X, under the usual linear operations and the *convolution* $*\colon \mathcal{A}^2 \to \mathcal{A}$ as the algebra multiplication which for arbitrary functions $g, h \in \mathcal{A}$ is defined by

$$\big(g * h\big)(x) = \sum_{\substack{x',\, x'' \in X \\ x'+x''=x}} g(x')\, h(x'') \qquad (x \in X).$$

Given $g \in \mathcal{A}$, consider the *k-dimensional Dirichlet series*

$$\widehat{g}(s) = \sum_{x \in X} g(x)\, e^{-x \cdot s} \qquad (s \in \mathbb{C}^k)$$

with the inner product $x \cdot s = x_1 s_1 + \cdots + x_k s_k$ for $x = (x_1, \ldots, x_k) \in X$ and $s = (s_1, \ldots, s_k) \in \mathbb{C}^k$. For fixed X, these multidimensional series form an algebra which is isomorphic to $\mathcal{A}$ under $\widehat{\ }\colon g \mapsto \widehat{g}$ for $\widehat{g}(s) \cdot \widehat{h}(s) := (g * h)^{\sim}(s)$.

The aim of the talk is to report on some results from [1] and [2] on the existence and analytic behavior of the solutions $g \in \mathcal{A}$ to the equation $Tg = 0$ for convolution polynomials $T\colon \mathcal{A} \to \mathcal{A}$ of degree $d \in \mathbb{N}$ defined by

$$Tg := a_d * g^{*d} + a_{d-1} * g^{*(d-1)} + \cdots + a_1 * g + a_0$$

with given arithmetic functions $a_d, a_{d-1}, \ldots, a_1, a_0 \in \mathcal{A}$, $a_d \neq 0$, where we write g^{*j} for the convolution $g * \cdots * g$ with j factors g.

In some cases the solutions have specific properties and can be determined explicitly. We show that the property of the coefficients to belong to convergent Dirichlet series transfers to those solutions $g \in \mathcal{A}$, whose values $g(1)$ are simple zeros of the polynomial $a_d(1)z^d + a_{d-1}(1)z^{d-1} + \cdots + a_1(1)z + a_0(1)$. The results can be extended to systems of convolution equations, which need not be of polynomial type.

– [1] H. Glöckner, L.G. Lucht and Š. Porubský : *Solutions to arithmetic convolution equations.* Proc. Amer. Math. Soc. **135** (2007), 1619–1629.
– [2] H. Glöckner, L.G. Lucht and Š. Porubský : *General Dirichlet series, arithmetic convolution equations and Laplace transforms.* Studia Math. (2009), to appear.

Computing the Factors of the ℓ^{th} Cyclotomic Polynomial over $\mathbb{F}_p$

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Consider the following algorithmic problem. Fix an odd prime ℓ. Given an odd prime $p \neq \ell$, factorise the ℓ^{th} cyclotomic polynomial over $\mathbb{F}_p$, the finite field of p elements.

In 1990, Jonathan Pila demonstrated a deterministic polynomial-time (in $\log p$) algorithm which produces a solution to this problem in the case that $p \equiv 1 \bmod \ell$. Pila's work generalises an algorithm of René Schoof, which calulates the number of points on an elliptic curve over a finite field, and its application to finding square roots mod p.

It has been the intent of my research to generalise Pila's method to obtain a deterministic polynomial-time algorithm which solves the problem for all $p \neq \ell$. In my presentation, I will develop the necessary machinery for the method, and present the current progress of my research.

Symmetric and Alternating groups as Galois groups of intersective polynomials.

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An intersective polynomial is a polynomial with integer coefficients that has roots mod n for all n, or equivalently, has roots in $\mathbb{Q}_p$ for all p. We consider only nontrivial intersective polynomials, i.e., having no rational roots. It is known that such a polynomial cannot be irreducible, hence must be a product of two or more irreducible factors. Furthermore, the Galois group of such a polynomial is "n-coverable", i.e., a union of n conjugacy classes of proper subgroups, where n is the number of the irreducible factors of the polynomial. Intersective polynomials consisting of two irreducible factors are of special interest. In that case, it can be shown that among the symmetric and alternating groups, only S_n, where $3 \leq n \leq 6$, and A_n, where $4 \leq n \leq 8$, occur as Galois groups. We have found explicit polynomials for these groups except for A_7 and A_8. In general, a sufficient condition that a Galois extension K of $\mathbb{Q}$ is the splitting field of an intersective polynomial is that all the decomposition groups are cyclic. This sufficient condition was used in all of the above cases except for A_6, where a specific 2-covering should be used.

Power bases for rings of integers of abelian imaginary fields

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Let p be a prime and let $\mathcal{O}_p$ be the ring of integers of $\mathbb{Q}(\zeta)$, where ζ is a primitive pth root of unity. Then $\mathcal{O}_p = \mathbb{Z}[\alpha]$ if $\alpha = \zeta, 1/(\zeta+1)$, or one of the conjugates of these two elements. Bremner conjectured that up to integer translation there are no further generators for $\mathcal{O}_p$. Robertson gave a partial answer to Bremner's conjecture : she proved that if α is a generator of $\mathbb{Z}[\zeta_p]$, then either α is an integer translate of a primitive pth root of unity, or $\alpha + \overline{\alpha}$ is an odd integer. We have recently generalized Robertson's result. More precisely we have proved that if L is an abelian imaginary field with conductor prime with 6 and if α is a generator of its ring of integers, then either α is an integer translate of a root of unity or $\alpha + \overline{\alpha}$ is an odd integer. We give a sketch of the proof of this result and we discuss some its corollaries.

Sur le nombre des diviseurs delta-proches

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La motivation initiale est la suivante : On se donne une suite d'entiers n dans l'intervalle $[1, x]$. Quitte à négliger certains entiers de fréquence relativement petite, on s'intéresse à évaluer le nombre de diviseurs de n qui sont δ-proches (Modèle : distance logarithmique ne dépassant pas δ). Le but de l'exposé est de présenter quelques résultats sur ce thème en une et plusieurs dimensions.

Arithmetic of lattices over Dedekind domains

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Let R be a Dedekind domain, let K be a field of quotients of R and let L/K be a finite separable field extension. For an R-lattice M in L, let $M' := \{z \in L \mid t_{L/K}(zM) \subseteq R\}$ denote the dual lattice. Generalizing the results of Heinrich Grell (1935) on non-principal orders in algebraic number fields, we investigate the ideal theory of R-orders in L. In particular, we characterise those R-orders T in L for which T' is an invertible fractional ideal of T.

Computing isogenies between abelian varieties

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Isogenies between elliptic curves are an important tool that can be used for point counting or determining the endomorphism ring of an elliptic curve. The computation of an isogeny uses the modular polynomial and Vélu's formulas. In genus two, equivalent of Vélu's formulas are unknown, and the height of the modular polynomials explodes. So far, only explicit isogenies of degree 2 (Richelot) or modular correspondances of degree 3 could be computed efficiently.

In this talk, we will use the modular space of abelian varieties with a theta structure, described by Mumford in 1966, to construct explicit isogenies of any degree between two abelian varieties over a finite field (of characteristic different from two).

A Jacobi type formula in two variables with application to new AGM

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The classical Jacobi formula for the elliptic integrals (Gesammelte Werke I, p.235) shows a relation between the Jacobi theta constant and the periods of the elliptic curve. In this talk we show a variant of this formula for the case of 2 variables with application to extended Gauss AGM (arithmetic geometric mean). Our result is induced from a precise description of modular forms on the complex hyperball (called Picard modular forms).

Models of genus one curves

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Minimal models for genus one curves can be considered as a generalization of minimal Weierstrass models for elliptic curves, but these models are generally far from being unique up to isomorphism. We introduce geometric criteria for a model of a genus one curve to be minimal and explain briefly how to count minimal models up to isomorphism.

Congruences for Apéry-like numbers

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It is known that the numbers which occur in Apéry's proof of the irrationality of the Riemann zeta function evaluated at 2 have many interesting congruence properties while the associated generating function satisfies a second order differential equation. We prove congruences for numbers which arise in Zagier's study of integral solutions of Apéry-like differential equations. This is joint work with Dermot McCarthy and Robert Osburn.

Des fonctions de distribution aux séries de Dirichlet à deux variables : un exemple concret.

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Dans cet exposé, nous expliquons comment l'utilisation des séries de Dirichlet à deux variables permettent d'obtenir l'estimation de sommes apparaissant au niveau du crible pondéré. Nous nous intéressons en particulier à

$$\sum_{d\leq D}(\mu^2(d))/(\phi(d)+X\sigma(d)), \quad (X>0, D\geq 1)$$

On the rank of the fibres of rational elliptic surfaces
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We compare the generic and the special ranks of rational elliptic surfaces over number fields. We show that, for a big class of rational elliptic surfaces, there are infinitely many fibres with rank at least equal to the generic rank plus two.

Classes de conjugaison de séries de p-torsion
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Soit F un corps fini de caractéristique p. Le problème de la classification à conjugaison près des séries réversibles à coefficients dans F qui sont de torsion pour la composition des séries se présente naturellement dans l'étude des systèmes dynamiques non archimédiens. Dans cet exposé, on démontre grâce à la théorie de Lubin-Tate la finitude de l'ensemble des classes de conjugaison de séries de p-torsion à ramification prescrite.

Classes de Steinitz d'extensions non abéliennes à groupe de Galois d'ordre 16 ou extra-spécial d'ordre 32 et problème de plongement.
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Soient k un corps de nombres et $Cl(k)$ son groupe des classes. Soit Γ un groupe non abélien d'ordre 16, ou un groupe extraspécial d'ordre 32. Soit $R_m(k,\Gamma)$ le sous-ensemble de $Cl(k)$ formé par les éléments qui sont réalisables par les classes de Steinitz d'extensions galoisiennes de k, modérément ramifiées et dont le groupe de Galois est isomorphe à Γ. Dans cette communication, on montre que $R_m(k,\Gamma)$ est le groupe $Cl(k)$ tout entier si le nombre des classes de k est impair. On étudie un problème de plongement en liaison avec les classes de Steinitz dans la perspective de l'étude des classes galoisiennes réalisables. En particulier, on prouve que pour tout $c \in Cl(k)$, il existe une extension quadratique de k, modérée, dont la classe de Steinitz est c, et qui est plongeable dans une extension galoisienne de k, modérée et à groupe de Galois isomorphe à Γ.

Height Bounds on Covering Curves

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We discuss how the heights of points on 2-coverings and 4-coverings are much smaller than heights on the Elliptic Curve. We make this explicit and compute workable bounds for the generators of the Elliptic Curve.

Ramanujan Primes and Bertrand's Postulate

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The n-th Ramanujan prime is the smallest positive integer R_n such that if $x \geq R_n$, then there are at least n primes in the interval $(x/2, x]$. For example, Bertrand's postulate is $R_1 = 2$. Ramanujan proved that R_n exists and gave the first five values as 2, 11, 17, 29, 41. In this talk, we use inequalities of Rosser and Schoenfeld to prove that $2n \log 2n < R_n < 4n \log 4n$ for all n, and we use the prime number theorem to show that R_n is asymptotic to the $2n$th prime. We also estimate the length of the longest string of consecutive Ramanujan primes among the first n primes, explain why there are more twin Ramanujan primes than expected, and make three conjectures. Our note will appear in Amer. Math. Monthly, August 2009.

Zeta determinants for double sequences

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We study the spectral functions, and in particular the zeta function, associated to a class of sequences of complex numbers, called of spectral type. We investigate the decomposability of the zeta function associated to a double sequence with respect to some simple sequence, and we provide a technique for obtaining the first terms in the Laurent expansion at zero of the zeta function associated to a double sequence. We particularize this technique to the case of sums of sequences of spectral type, and we give two applications : the first concerning some special functions appearing in number theory, and the second the functional determinant of the Laplace operator on a product space.

Sets with several centers of symmetry

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Let A be a finite subset of the group $G = \mathbb{Z}^2$. For every element b_i of the sumset $A + A = \{b_0, b_1, ..., b_{|2A|-1}\}$ we denote by D_i the set of all differences $d = a - a'$ such that $a + a' = b_i$ and (a, a') belongs to $A \times A$; put $r_i = |D_i(A)|$. After an eventual reordering of $A + A$, we may assume that $r_0 \geq r_1 \geq ... \geq r_{|2A|-1}$. Define $R_s(A) = |D_0 \cup \ldots \cup D_{s-1}|$ and $R_s(k) = \max\{R_s(A) : A \subseteq G, |A| = k\}$. In this talk, we examine the case of $s = 4$ centers of symmetry $C = \{c_0, c_1, c_2, c_3\}, c_i = b_i/2$. We will show how to obtain the exact value of $R_4(k)$ and we will also describe the structure of extremal sets.

This is a joint work with G. A. Freiman.

Bounds for the discrete correlation of infinite sequences on k symbols and generalized Rudin-Shapiro sequences

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Pseudorandom sequences, i.e., deterministic sequences with properties reminiscent of random sequences, are a well-studied subject. In this talk, we study the discrete correlaton of infinite sequences over a finite alphabet, where we just take into account whether two symbols are identical. We show that the correlation cannot be too small in some specific sense; moreover, we construct a large class of sequences (generalized Rudin-Shapiro sequences) which achieve the bound, provided k is prime or squarefree. The proofs involve combinatorial sieving, the Lovasz local lemma and exponential sums estimates.

Explicit degree of a number field and quadratic non-residues

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Let $\{a_1, a_2, \cdots, a_n\}$ be the subset of integers such that none of them is a perfect square. We give necessary and sufficient condition for this set of elements are quadratic non-residue modulo p for infinitely many prime p. Also, we link this problem to find the explicit degree of $\mathbb{Q}(\sqrt{a_1}, \sqrt{a_2}, \cdots, \sqrt{a_n})$ over $\mathbb{Q}$.

Normal basis generators over local fields

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The content of this talk is partly issued from a joint work with M. Florence and B. de Smit.

Let L/K be a p-extension of local fields with residue characteristic $p > 0$. In this talk, we will pursue the investigation initiated by N. Byott and G. Elder into the existence of a valuation criterion for an element x in L to generate a normal basis for L/K.

Precisely, our argument will lead us to the consideration of the following criterion. Let d be the valuation of the different of L/K. We say that the extension L/K satisfies (*) if every element of L whose valuation is congruent to $-d-1$ modulo $[L : K]$ is a normal basis generator. Our main focus is to determine which totally ramified p-extensions satisfy (*), in the equal and unequal characteristic cases.

Hopf-Galois Module Structure of a Class of Tamely Ramified Extensions

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Non-classical Hopf-Galois structures provide alternative ways to study the algebraic integers in a finite extension of number fields or p-adic fields. This approach has proven fruitful in the study of wildly ramified extensions, but also raises interesting questions concerning tamely ramified extensions.

We shall consider a class of tamely ramified Galois extensions L/K of number fields and present a result describing the local structure of $\mathfrak{O}_L$ with respect to a non-classical Hopf-Galois structure, analogous to Noether's theorem in the classical case. On the other hand, we shall give examples which illustrate that a direct analogue of the Hilbert-Speiser theorem (describing the global structure of $\mathfrak{O}_L$) does not hold.

On lattices with maximal lengths

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In this talk I discuss Schmutz's conjecture that in dimension 2 to 8 the distinct norms that occur in the lattices with the best known sphere packings are strictly greater than those in any other lattice of the same covolume. We see that the ternary conjecture is not true. However, it seems that there is but one exception : one lattice, where for one length the conjecture fails.

The totally real algebraic integers with diameter less than 4

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The diameter of a totally real algebraic integer α of degree d with conjugates $\alpha_1 < \alpha_2 < \ldots < \alpha_d$ is $\mathrm{diam}(\alpha) = \alpha_d - \alpha_1$. For all positive integers k, n $\mathrm{diam}(2\cos(2k\pi/n))$ is less than 4. R. M. Robinson has computed, modulo integer translations, all the totally real algebraic integers α with $\mathrm{diam}(\alpha) < 4$ for $d \leq 6$. We have done the computations for all $d \leq 13$. We used a great family of explicit auxiliary functions related to generalised integer transfinite diameter of real intervals. They give good bounds for the coefficients of the minimal polynomial of α.

Prime numbers in intervals of logarithmic length

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We give a new estimate for the integral moments of primes in short intervals, and use it to improve Cheer and Goldston's result (1987) on the size of real numbers $y > 1$ with the property that there is a positive proportion of integers $m \leq X$ such that the interval $(m, m + y \log X]$ contains no primes. We also give several other results concerning the moments of the gaps between consecutive primes and the proportion of integers $m \leq X$ such that the interval $(m, m + y \log X]$ contains at least a prime number.

Special values of Witten multiple zeta functions

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In this talk I'll describe some relations between special values of Witten multiple zeta functions attached to $\mathbf{so}(5)$ and $\mathbf{sl}(4)$ at non-negative integers and the special values of (alternating) Euler sums.

On Hecke Eigenvalues at Piatetski-Shapiro Primes

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This is a joint work with Stephan Baier. Let $\lambda(n)$ be the normalized n-th Fourier coefficient of a holomorphic cusp form for the full modular group. We show that for some constant $C > 0$ depending on the cusp form and every fixed c with $1 < c < 8/7$, the mean value of $\lambda(p)$ is $\ll \exp(-C\sqrt{\log N})$ as p runs over all (Piatetski-Shapiro) primes of the form $[n^c]$ with for some natural number $n \leq N$.

On the Euler-Kronecker constant and limit zeta functions

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In this talk we will study asymptotic properties of the Euler-Kronecker constant in towers of number fields. Assuming GRH, we prove in the number field case the analogues of the results obtained by Ihara in the function field case. The techniques of limit zeta functions turn out to be useful. Furthermore, if time permits, we will try to show that limit zeta and L-functions are particularly useful to approach various Brauer-Siegel like asymptotic problems in the theory of global fields and varieties over them.

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Chapitre 6

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