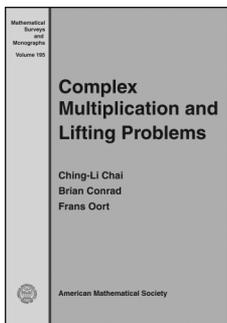


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Algebra and Algebraic Geometry



Complex Multiplication and Lifting Problems

Ching-Li Chai, *University of Pennsylvania, Philadelphia, PA*, **Brian Conrad**, *Stanford University, CA*, and **Frans Oort**, *University of Utrecht, The Netherlands*

Abelian varieties with complex multiplication lie at the origins of class field theory, and they play a central role in the contemporary theory of Shimura varieties. They are special in characteristic 0 and ubiquitous over finite fields. This book explores the relationship between such abelian varieties over finite fields and over arithmetically interesting fields of characteristic 0 via the study of several natural *CM lifting problems* which had previously been solved only in special cases. In addition to giving complete solutions to such questions, the authors provide numerous examples to illustrate the general theory and present a detailed treatment of many fundamental results and concepts in the arithmetic of abelian varieties, such as the Main Theorem of Complex Multiplication and its generalizations, the finer aspects of Tate's work on abelian varieties over finite fields, and deformation theory.

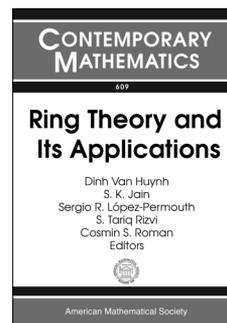
This book provides an ideal illustration of how modern techniques in arithmetic geometry (such as descent theory, crystalline methods, and group schemes) can be fruitfully combined with class field theory to answer concrete questions about abelian varieties. It will be a useful reference for researchers and advanced graduate students at the interface of number theory and algebraic geometry.

This item will also be of interest to those working in number theory.

Contents: Introduction; Algebraic theory of complex multiplication; CM lifting over a discrete valuation ring; CM lifting of p -divisible groups; CM lifting of abelian varieties up to isogeny; Some arithmetic results for abelian varieties; CM lifting via p -adic Hodge theory; Notes on quotes; Glossary of notations; Bibliography; Index.

Mathematical Surveys and Monographs, Volume 195

January 2014, 387 pages, Hardcover, ISBN: 978-1-4704-1014-8, LC 2013036892, 2010 *Mathematics Subject Classification*: 11G15, 14K02, 14L05, 14K15, 14D15, **AMS members US\$80**, List US\$100, Order code SURV/195



Ring Theory and Its Applications

Dinh Van Huynh, **S. K. Jain**, and **Sergio R. López-Permouth**, *Ohio University, Athens, OH*, and **S. Tariq Rizvi** and **Cosmin S. Roman**, *Ohio State University, Lima, OH*, Editors

This volume contains the proceedings of the Ring Theory Session in honor of T. Y. Lam's 70th birthday, at the 31st Ohio State Denison Mathematics Conference, held from May 25–27, 2012, at Ohio State University, Columbus, Ohio.

Included are expository articles and research papers covering topics such as cyclically presented modules, Eggert's conjecture, the Mittag-Leffler conjecture, clean rings, McCoy rings, QF rings, projective and injective modules, Baer modules, and Leavitt path algebras.

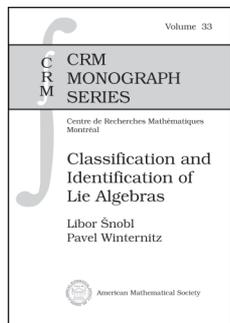
Graduate students and researchers in many areas of algebra will find this volume valuable as the papers point out many directions for future work; in particular, several articles contain explicit lists of open questions.

Contents: **G. M. Bergman**, Thoughts on Eggert's conjecture; **P. Bhattacharjee**, **M. L. Knox**, and **W. W. McGovern**, p -Extensions; **H. Chen**, **A. Harmancı**, and **A. C. Özcan**, Strongly J -clean rings with involutions; **J. Chen**, **W. Li**, and **L. Shen**, QF rings characterized by injectivities: A survey; **H. Q. Dinh**, Repeated-root cyclic and negacyclic codes of length $6p^8$; **A. Facchini**, **D. Smertnig**, and **N. K. Tung**, Cyclically presented modules, projective covers and factorizations; **J. Gaddis**, Isomorphisms of some quantum spaces; **P. A. Guil Asensio** and **A. K. Srivastava**, Additive unit representations in endomorphism rings and an extension of a result of Dickson and Fuller; **B. Ungor**, **S. Halicioğlu**, and **A. Harmancı**, On a class of \oplus -supplemented modules; **D. Herbera**, Definable classes and Mittag-Leffler conditions; **K. Joshi**, **P. Kanwar**, and **J. B. Srivastava**, A note on clean group algebras; **D. Keskin Tütüncü**, **P. F. Smith**, and **S. E. Toksoy**, On dual Baer modules; **T. Y. Lam** and **P. P. Nielsen**, Jacobson's lemma for Drazin inverses; **G. Lee**, **S. T. Rizvi**, and **C. Roman**, Transfer of certain properties from modules to their endomorphism rings; **T.-K. Lee** and **Y. Zhou**, From Boolean rings to clean rings; **A. Leroy** and **J. Matczuk**, On right strongly McCoy rings; **B. L. Osofsky**, Compatible ring structures on injective hulls of finitely embedded rings; **K. L. Price** and **S. Szydlík**, Good matrix gradings from directed graphs; **K. M. Rangaswamy**, Leavitt path algebras which are Zorn rings; **M. L. Reyes**, Sheaves that fail to

represent matrix rings; **S. Singh** and **A. K. Srivastava**, Rings of invariant module type and automorphism-invariant modules.

Contemporary Mathematics, Volume 609

March 2014, approximately 314 pages, Softcover, ISBN: 978-0-8218-8797-4, LC 2013032319, 2010 *Mathematics Subject Classification*: 16-XX, 13A35, 13C10, 13E10, 14A22, 18B25, 18F20, 20G07, **AMS members US\$90.40**, List US\$113, Order code CONM/609



Classification and Identification of Lie Algebras

Libor Šnobl, *Czech Technical University, Prague, Czech Republic*, and **Pavel Winternitz**, *Centre de Recherches Mathématiques, Montréal, QC, Canada, and Université de Montréal, QC, Canada*

The purpose of this book is to serve as a tool for researchers and practitioners who apply Lie algebras and Lie groups to solve problems arising in science and engineering. The authors address the problem of expressing a Lie algebra obtained in some arbitrary basis in a more suitable basis in which all essential features of the Lie algebra are directly visible. This includes algorithms accomplishing decomposition into a direct sum, identification of the radical and the Levi decomposition, and the computation of the nilradical and of the Casimir invariants. Examples are given for each algorithm.

For low-dimensional Lie algebras this makes it possible to identify the given Lie algebra completely. The authors provide a representative list of all Lie algebras of dimension less or equal to 6 together with their important properties, including their Casimir invariants. The list is ordered in a way to make identification easy, using only basis independent properties of the Lie algebras. They also describe certain classes of nilpotent and solvable Lie algebras of arbitrary finite dimensions for which complete or partial classification exists and discuss in detail their construction and properties.

The book is based on material that was previously dispersed in journal articles, many of them written by one or both of the authors together with their collaborators. The reader of this book should be familiar with Lie algebra theory at an introductory level.

This item will also be of interest to those working in mathematical physics.

Titles in this series are co-published with the Centre de Recherches Mathématiques.

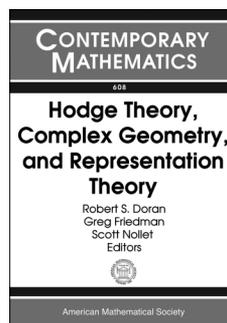
Contents: *Part 1. General theory:* Introduction and motivation; Basic concepts; Invariants of the coadjoint representation of a Lie algebra; *Part 2. Recognition of a Lie algebra given by its structure constants:* Identification of Lie algebras through the use of invariants; Decomposition into a direct sum; Levi decomposition. Identification of the radical and Levi factor; The nilradical of a Lie algebra; *Part 3. Nilpotent, solvable and Levi decomposable Lie algebras:* Nilpotent Lie algebras; Solvable Lie algebras and their nilradicals; Solvable Lie algebras with abelian nilradicals; Solvable Lie algebras with Heisenberg nilradical; Solvable Lie algebras with Borel nilradicals; Solvable Lie algebras with filiform and quasifiliform nilradicals; Levi decomposable algebras; *Part 4. Low-dimensional Lie algebras:* Structure of the lists of low-dimensional Lie algebras; Lie algebras up

to dimension 3; Four-dimensional Lie algebras; Five-dimensional Lie algebras; Six-dimensional Lie algebras; Bibliography; Index.

CRM Monograph Series, Volume 33

February 2014, 306 pages, Hardcover, ISBN: 978-0-8218-4355-0, 2010 *Mathematics Subject Classification*: 17Bxx, 17B05, 81Rxx, 81R05, 70Hxx, 37J15; 17B20, 17B30, 17B40, 70Sxx, 37Jxx, **AMS members US\$99.20**, List US\$124, Order code CRMM/33

Geometry and Topology



Hodge Theory, Complex Geometry, and Representation Theory

Robert S. Doran, *Texas Christian University, Ft. Worth, TX*, **Greg Friedman**, *Texas Christian University, Ft. Worth, TX*, and **Scott Nollet**, *Texas Christian University, Ft. Worth, TX*, Editors

This volume contains the proceedings of an NSF/Conference Board of the Mathematical Sciences (CBMS) regional conference on

Hodge theory, complex geometry, and representation theory, held on June 18, 2012, at the Texas Christian University in Fort Worth, TX. Phillip Griffiths, of the Institute for Advanced Study, gave 10 lectures describing now-classical work concerning how the structure of Shimura varieties as quotients of Mumford-Tate domains by arithmetic groups had been used to understand the relationship between Galois representations and automorphic forms. He then discussed recent breakthroughs of Carayol that provide the possibility of extending these results beyond the classical case. His lectures will appear as an independent volume in the CBMS series published by the AMS.

This volume, which is dedicated to Phillip Griffiths, contains carefully written expository and research articles. Expository papers include discussions of Noether-Lefschetz theory, algebraicity of Hodge loci, and the representation theory of $SL_2(\mathbb{R})$. Research articles concern the Hodge conjecture, Harish-Chandra modules, mirror symmetry, Hodge representations of Q -algebraic groups, and compactifications, distributions, and quotients of period domains. It is expected that the book will be of interest primarily to research mathematicians, physicists, and upper-level graduate students.

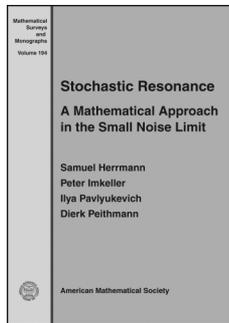
This item will also be of interest to those working in algebra and algebraic geometry.

Contents: **D. Arapura**, **X. Chen**, and **S.-J. Kang**, The smooth center of the cohomology of a singular variety; **J. Brevik** and **S. Nollet**, Developments in Noether-Lefschetz theory; **J. A. Carlson** and **D. Toledo**, Compact quotients of non-classical domains are not Kähler; **E. Cattani** and **A. Kaplan**, Algebraicity of Hodge loci for variations of Hodge structure; **M. Green** and **P. Griffiths**, On the differential equations satisfied by certain Harish-Chandra modules; **T. Hayama**, Kato-Usui partial compactifications over the toroidal compactifications of Siegel spaces; **A. Kaplan** and **M. Subils**, On the equivalence problem for bracket-generating distributions; **M. Kerr**, Notes on the representation theory of $SL_2(\mathbb{R})$; **M. Kerr**, Cup products in automorphic cohomology: The case of Sp_4 ; **J. D. Lewis**, Hodge type conjectures and the Bloch-Kato theorem; **C. Robles**, Principal Hodge representations; **S. Usui**, A study of mirror symmetry through log mixed Hodge theory.

Contemporary Mathematics, Volume 608

March 2014, approximately 320 pages, Softcover, ISBN: 978-0-8218-9415-6, LC 2013031105, 2010 *Mathematics Subject Classification*: 14C25, 14C30, 14D07, 14M17, 20G05, 22E45, 22E46, 22E47, 32G20, 32M10, **AMS members US\$90.40**, List US\$113, Order code CONM/608

Probability and Statistics

**Stochastic Resonance**

A Mathematical Approach in the Small Noise Limit

Samuel Herrmann, *Université de Bourgogne, Dijon, France*, **Peter Imkeller**, *Humboldt-Universität zu Berlin, Germany*, **Ilya Pavlyukevich**, *Friedrich-Schiller-Universität Jena, Germany*, and **Dierk Peithmann**, *Essen, Germany*

Stochastic resonance is a phenomenon arising in a wide spectrum of areas in the sciences ranging from physics through neuroscience to chemistry and biology.

This book presents a mathematical approach to stochastic resonance which is based on a large deviations principle (LDP) for randomly perturbed dynamical systems with a weak inhomogeneity given by an exogenous periodicity of small frequency. Resonance, the optimal tuning between period length and noise amplitude, is explained by optimizing the LDP's rate function.

The authors show that not all physical measures of tuning quality are robust with respect to dimension reduction. They propose measures of tuning quality based on exponential transition rates explained by large deviations techniques and show that these measures are robust.

The book sheds some light on the shortcomings and strengths of different concepts used in the theory and applications of stochastic resonance without attempting to give a comprehensive overview of the many facets of stochastic resonance in the various areas of sciences. It is intended for researchers and graduate students in mathematics and the sciences interested in stochastic dynamics who wish to understand the conceptual background of stochastic resonance.

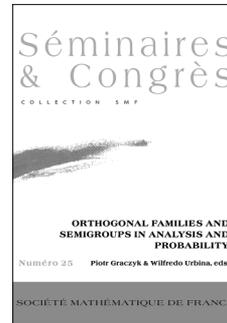
Contents: Heuristics of noise induced transitions; Transitions for time homogeneous dynamical systems with small noise; Semiclassical theory of stochastic resonance in dimension 1; Large deviations and transitions between meta-stable states of dynamical systems with small noise and weak inhomogeneity; Supplementary tools; Laplace's method; Bibliography; Index.

Mathematical Surveys and Monographs, Volume 194

January 2014, 189 pages, Hardcover, ISBN: 978-1-4704-1049-0, LC 2013034700, 2010 *Mathematics Subject Classification*: 60H10, 60J60; 34D45, 37H10, 60F10, 60J70, 60K35, 86A10, **AMS members US\$61.60**, List US\$77, Order code SURV/194

New AMS-Distributed Publications

Algebra and Algebraic Geometry

**Orthogonal Families and Semigroups in Analysis and Probability**

Piotr Graczyk, *Université d'Angers, France*, and **Wilfredo Urbina**, *Roosevelt University, Chicago, IL*, Editors

The CIMPA-UNESCO workshop "Orthogonal Families and Semigroups in Analysis and Probability" was held in Mirida, Venezuela and was organized with the collaboration of three Venezuelan universities (UCV, USB, and ULA). The objective of the workshop was to present the modern theory of operator semigroups, related to polynomial orthogonal expansions.

This theory comprises a vast body of knowledge and has interconnections with several other areas, including harmonic analysis, probability, random matrices, stochastic calculus, and control theory. The chapters in this volume originate from the lectures at this workshop and stress the interplay of all these domains.

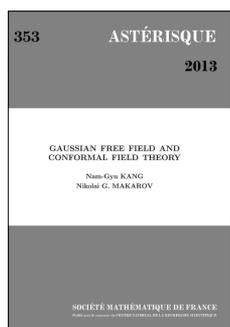
This item will also be of interest to those working in analysis.

A publication of the Société Mathématique de France, Marseilles (SMF), distributed by the AMS in the U.S., Canada, and Mexico. Orders from other countries should be sent to the SMF. Members of the SMF receive a 30% discount from list.

Contents: **D. Bárcenas** and **H. Leiva**, Semigroups and control theory; **J. Faraut**, Random matrices and orthogonal polynomials; **P. Feinsilver**, Lie algebras, representations, and analytic semigroups through dual vector fields; **P. Graczyk** and **T. Jakubowski**, Analysis of Ornstein-Uhlenbeck and Laguerre stochastic processes; **S. Thangavelu**, Hermite and Laguerre semigroups: Some recent developments; **W. O. Urbina**, Semigroups of operators for classical orthogonal polynomials and functional inequalities.

Séminaires et Congrès, Number 25

May 2013, 383 pages, Softcover, ISBN: 978-2-85629-362-1, 2010 *Mathematics Subject Classification*: 17B66, 17B99, 33C45, 33C80, 37C10, 42A38, 42A99, 42B08, 42B15, 42C25, 42C10, 46L53, 47D03, 60B10, 60E05, 60G15, 60G40, 60J45, 60H99, **AMS members US\$89.60**, List US\$112, Order code SECO/25



Gaussian Free Field and Conformal Field Theory

Nam-Gyu Kang, *Seoul National University, Republic of Korea*, and **Nikolai G. Makarov**, *California Institute of Technology, Pasadena, CA*

In these mostly expository lectures, the authors give an elementary introduction to conformal field theory in the context of probability theory and complex analysis. The authors consider statistical fields and define Ward functionals in terms of their Lie derivatives. Based on this approach, the authors explain some equations of conformal field theory and outline their relation to SLE theory.

A publication of the Société Mathématique de France, Marseilles (SMF), distributed by the AMS in the U.S., Canada, and Mexico. Orders from other countries should be sent to the SMF. Members of the SMF receive a 30% discount from list.

Contents: Introduction; Lecture 1. Fock space fields; Appendix 2. Fock space fields as (very) generalized random functions; Lecture 3. Operator product expansion; Lecture 4. Conformal geometry of Fock space fields; Lecture 5. Stress tensor and Ward's identities; Appendix 6. Ward's identities for finite Boltzmann-Gibbs ensembles; Lecture 7. Virasoro field and representation theory; Appendix 8. Existence of the Virasoro field; Appendix 9. Operator algebra formalism; Lecture 10. Modifications of the Gaussian free field; Appendix 11. Current primary fields and KZ equations; Lecture 12. Multivalued conformal Fock space fields; Appendix 13. CFT and SLE numerology; Lecture 14. Connection to SLE theory; Lecture 15. Vertex observables; Bibliography; Index.

Astérisque, Number 353

June 2013, 136 pages, Softcover, ISBN: 978-2-85629-369-0, 2010 *Mathematics Subject Classification:* 60J67, 81T40; 30C35, **AMS members US\$41.60**, List US\$52, Order code AST/353



Weight Filtration and Slope Filtration on the Rigid Cohomology of a Variety in Characteristic $p > 0$

Yukiyoshi Nakkajima, *Tokyo Denki University, Japan*

The author constructs a theory of weights on the rigid cohomology of a separated scheme of finite type over a perfect field of characteristic $p > 0$ by using the log crystalline cohomology of a split proper hypercovering of the scheme. The author also calculates the slope filtration on the rigid cohomology by using the cohomology of the log de Rham-Witt complex of the hypercovering.

A publication of the Société Mathématique de France, Marseilles (SMF), distributed by the AMS in the U.S., Canada, and Mexico. Orders from other countries should be sent to the SMF. Members of the SMF receive a 30% discount from list.

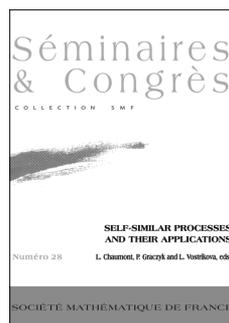
Contents: Introduction; Part I. Weight filtration on the log crystalline cohomology of a simplicial family of open smooth varieties in

characteristic $p > 0$; Part II. Weight filtration and slope filtration on the rigid cohomology of a separated scheme of finite type over a perfect field of characteristic $p > 0$; Part III. Weight filtrations and slope filtrations on rigid cohomologies with closed support and with compact support; Bibliography.

Mémoires de la Société Mathématique de France, Number 130/131

December 2012, 250 pages, Softcover, ISBN: 978-2-85629-376-8, 2010 *Mathematics Subject Classification:* 14F30, **AMS members US\$72**, List US\$90, Order code SMFMEM/130/131

Analysis



Self-Similar Processes and Their Applications

Loïc Chaumont, **Piotr Graczyk**, and **Lioudmila Vostrikova**, *Université d'Angers, France*, Editors

This volume contains articles related to the conference Self-Similar Processes and Their Applications, which took place in Angers from July 20–24, 2009. Self-similarity is the property which certain stochastic processes

have of preserving their distribution under a time-scale change. This property appears in all areas of probability theory and offers a number of fields of application.

The aim of this conference is to bring together the main representatives of different aspects of self-similarity currently being studied in order to promote exchanges on their recent research and enable them to share their knowledge with young researchers.

- Self-similar Markov processes
- Matrix valued self-similar processes
- Self-similarity, trees, branching and fragmentation
- Fractional and multifractional processes
- Stochastic Löwner evolution
- Self-similarity in finance

The organization of the conference was achieved in cooperation with probabilists and statisticians from the research federation Mathématiques des Pays de la Loire. The ANR Géométrie différentielle stochastique et Auto-similarité, based at the University Toulouse III, and the Franco-Mexican project ECOS-Nord, Étude des processus markoviens auto-similaires also contributed to the organization.

A publication of the Société Mathématique de France, Marseilles (SMF), distributed by the AMS in the U.S., Canada, and Mexico. Orders from other countries should be sent to the SMF. Members of the SMF receive a 30% discount from list.

Contents: **K. Falconer**, Localisable, multifractional and multistable processes; **A. Echelard**, **J. L. Véhel**, and **C. Tricot**, A unified framework for 2-microlocal and large deviation spectra; **M. Maejima** and **Y. Ueda**, Quasi-selfsimilar additive processes; **P.-O. Amblard**, **J.-F. Coeurjolly**, **F. Lavancier**, and **A. Philippe**, Basic properties of the multivariate fractional Brownian motion; **J. B. Levy** and **M. S. Taqqu**, On the codifference of linear fractional stable motion; **M. Yor**, On weak and strong Brownian filtrations: definitions and examples; A. Program; B. List of participants.

Séminaires et Congrès, Number 28

July 2013, 121 pages, Softcover, ISBN: 978-2-85629-365-2, 2010 *Mathematics Subject Classification*: 26A16, 28A80, 42C40, 60E07, 60G10, 60G18, 60G22, 60G51, 60J65, **AMS members US\$31.20**, List US\$39, Order code SECO/28

Discrete Mathematics and Combinatorics



Operads 2009

Jean-Louis Loday, *Université de Strasbourg, CNRS, France*, and **Bruno Vallette**, *Université de Nice-Sophia Antipolis, France*, Editors

An operad is a mathematical device used to encode universally a wide variety of algebraic structures. The name operad appeared first in the 1970s in algebraic

topology to recognize n -fold loop spaces. Operads enjoyed a renaissance in the nineties, mainly under the impulse of quantum field theories. This universal notion is now used in many domains of mathematics such as differential geometry (deformation theory), algebraic geometry (moduli spaces of curves, Gromov-Witten invariants), noncommutative geometry (cyclic homology), algebraic combinatorics (Hopf algebras), theoretical physics (field theories, renormalization), computer science (rewriting systems) and universal algebra.

The purpose of this volume is to present contributions about the notion of operads in these fields, where they play an important role. This volume is a result of a school and a conference, "Operads 2009", both of which took place at the CIRM (Luminy, France) in April 2009.

This item will also be of interest to those working in algebra and algebraic geometry.

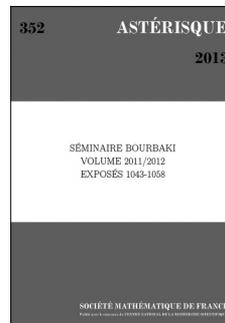
A publication of the Société Mathématique de France, Marseilles (SMF), distributed by the AMS in the U.S., Canada, and Mexico. Orders from other countries should be sent to the SMF. Members of the SMF receive a 30% discount from list.

Contents: **M. Batanin**, **C. Berger**, and **M. Markl**, Operads of natural operations I: Lattice paths, braces and Hochschild cochains; **F. Chapoton**, Categorification of the dendriform operad; **V. Dotsenko**, Freeness theorems for operads via Gröbner bases; **V. Dotsenko** and **M. V. Johansson**, Implementing Gröbner bases for operads; **B. Fresse**, Batanin's category of pruned trees is Koszul; **Y. Guiraud** and **P. Malbos**, Identities among relations for higher-dimensional rewriting systems; **Y. Lafont**, Diagram rewriting and operads; **Y. I. Manin**, Renormalization and computation I: Motivation and background; **T. Schedler**, Connes-Kreimer quantizations and PBW theorems for pre-Lie algebras; **D. P. Sinha**, The (non-equivariant) homology of the little disks operad A .

Séminaires et Congrès, Number 26

July 2013, 279 pages, Softcover, ISBN: 978-2-85629-363-8, 2010 *Mathematics Subject Classification*: 05C05, 06A11, 08B20, 16S15, 16G20, 17B35, 17D99, 18D05, 18C10, 18G15, 18D20, 18D50, 18G55, 55P48, 55R80, 55U99, 57T30, 68Q05, 68Q12, 68N18, 68Q25, 68W30, 68Q42, **AMS members US\$51.20**, List US\$64, Order code SECO/26

General Interest



Séminaire Bourbaki

Volume 2011/2012
Exposés 1043–1058

A note to readers: Many of the papers in this volume are in French.

This 64th volume of the Bourbaki Seminar contains the texts of the sixteen survey lectures presented during 2011/2012: one about functional analysis, one about complexity of algorithms, two on partial

differential equations, four on algebraic geometry, one about differential geometry, one about ergodic theory, three on number theory, and three other lectures on mathematical physics.

A publication of the Société Mathématique de France, Marseilles (SMF), distributed by the AMS in the U.S., Canada, and Mexico. Orders from other countries should be sent to the SMF. Members of the SMF receive a 30% discount from list.

Contents: **NOVEMBRE 2011:** **M. Brion**, Restriction de représentations et projections d'orbites coadjointes; **C. Mouhot**, Stabilité orbitale pour le système de Vlasov-Poisson gravitationnel; **P. Pansu**, Difficulté d'approximation; **P. Raphaël**, Concentration compacte à la Kenig-Merle; **JANVIER 2012:** **K. Ball**, The Ribe programme; **P. Deligne**, Multizêtas, d'après Francis Brown; **B. Poonen**, Average rank of elliptic curves; **C. Sabbah**, Théorie de Hodge et correspondance de Hitchin-Kobayashi sauvages; **MARS 2012:** **M. Dafermos**, The formation of black holes in general relativity; **C. Garban**, Quantum gravity and the KPZ formula; **D. Lannes**, Space time resonances; **J. Wolf**, Arithmetic and polynomial progressions in the primes; **JUIN 2012:** **N. Bergeron**, La conjecture des sous-groupes de surfaces; **A. Ducros**, Les espaces de Berkovich sont modérés; **J.-M. Fontaine**, Perfectoïdes, presque pureté et monodromie-poids; **F. Ledrappier**, Mesures stationnaires sur les espaces homogènes.

Astérisque, Number 352

July 2013, 556 pages, Softcover, ISBN: 978-2-85629-371-3, 2010 *Mathematics Subject Classification*: 03C64, 03C65, 03C99, 05C10, 05C12, 05C80, 05C85, 11B25, 11B30, 11E76, 11G05, 11G25, 11G99, 11N13, 14F20, 14G22, 14J60, 14L24, 14M15, 17B08, 20G05, 22E40, 22E46, 30F99, 32C38, 35B34, 35B60, 35E20, 35L67, 35Q35, 35Q60, 35Q83, 35Qxx, 37D40, 37N20, 37Nxx, 46B85, 47N10, 53C07, 60B99, 60C05, 60F17, 68Q17, 68R10, 68W25, 82B05, 82B20, 82B27, 82Cxx, 83C05, 83C57, 83C75, 85Axx, 90C22, 91B14, **Individual member US\$112.80**, List US\$141, Order code AST/352

Mathematical Sciences Center

Tsinghua University, Beijing, China

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The review process starts in December 2013, and closes by April 30, 2014. Applicants are encouraged to submit their applications before February 28, 2014.

Positions: post-doctorate fellowship

Mathematical Sciences Center (MSC) will hire a substantial number of post-doctorate fellows in the full spectrum of mathematical sciences. New and recent PhDs are encouraged for this position.

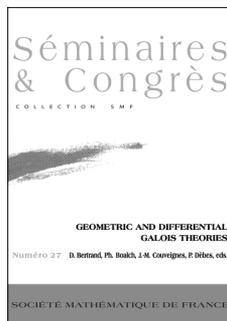
A typical appointment for post-doctorate fellowship of MSC is for three-years. Salary and compensation package are determined by qualification, accomplishment, and experience. MSC offers very competitive packages.

Completed applications must contain curriculum vitae, research statement, teaching statement, selected reprints and /or preprints, three reference letters, sent electronically to msc-recruitment@math.tsinghua.edu.cn

The review process starts in December 2013, and closes by April 30, 2014. Applicants are encouraged to submit their applications before February 28, 2014.

New AMS-Distributed Publications

Number Theory



Geometric and Differential Galois Theories

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On March 29–April 2, 2010, a meeting was organized at the Luminy CIRM (France) on geometric and differential Galois theories, to recognize the close ties these theories have woven in recent years. This volume contains the proceedings of this meeting. Although it may be viewed as a continuation of the meeting held six years earlier on arithmetic and differential Galois groups (see *Groups de Galois Arithmétiques et Différentiels*, *Séminaires et Congrès*, volume 13), several new and promising themes have appeared.

The articles gathered here cover the following topics: moduli spaces of connexions, differential equations and coverings in finite characteristic, liftings, monodromy groups in their various guises (tempered fundamental group, motivic groups, generalized difference Galois groups), and arithmetic applications.

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Contents: **L. Bary-Soroker** and **F. Arno**, Open problems in the theory of ample fields; **A. Buium**, Galois groups arising from arithmetic étale equations; **A. Cadoret**, Motivated cycles under specialization; **A. Cadoret** and **A. Tamagawa**, Note on torsion conjecture; **F. Heiderich**, Introduction to the Galois theory of Artinian simple module algebras; **E. Lepage**, Tempered fundamental group; **F. Loray**, **M.-H. Saito**, and **C. Simpson**, Foliations on the moduli space of connections; **B. Matzat**, Monodromy of Frobenius modules; **A. Maurischat**, On the finite inverse problem in iterative étale Galois theory; **A. Obus**, Toward Abhyankar's inertia conjecture for $PSL_2(\ell)$; **M. Van Der Put**, Families of linear étale equations and the Painlevé equations; **M. Wibmer**, On the Galois theory of strongly normal étale and difference extensions; Annexe A. Programme; Annexe B. Liste des participants.

Séminaires et Congrès, Number 27

July 2013, 247 pages, Softcover, ISBN: 978-2-85629-364-5, 2010 *Mathematics Subject Classification*: 11F32, 11S20, 12E30, 12F10, 12F12, 12F15, 12H05, 12H10, 12H20, 12H25, 13B05, 14C25, 14D20, 14D22, 14F20, 14F42, 14G20, 14G22, 14H30, 14K15, 16T10, 20D06, 20G40, 32G20, 32G34, 34M15, 34M55, **AMS members US\$48**, List US\$60, Order code SECO/27