CONTEMPORARY MATHEMATICS

686

# Arithmetic, Geometry, Cryptography and Coding Theory

15th International Conference
Arithmetic, Geometry, Cryptography and Coding Theory
May 18–22, 2015
CIRM, Luminy, France

Alp Bassa
Alain Couvreur
David Kohel
Editors


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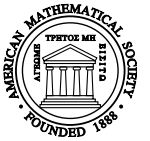


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# Preface

The $15^{\text{th}}$ edition of the conference Arithmetic Geometry Cryptography and Coding Theory took place at the *Centre International de Rencontres Mathématiques* (CIRM) in Luminy from May 18 to 22, 2015. It gathered together nearly one hundred researchers from eighteen different countries, all working on aspects of algebraic geometry over finite fields, number theory, cryptography and coding theory. Reaching 28 years since the first edition of the conference in 1987, the community remains extremely active. In particular, the significant participation of young researchers in the conference shows the high dynamism of the domain reflects well on its future prospect.

Four plenary speakers were invited to give an overview on problems connected to the main themes of the conference. Alena Pirutka gave a talk on cycle class maps and surveyed known results and open questions related to Tate conjectures. Ernst-Ulrich Gekeler presented a construction of families of curves with many points from higher-rank Drinfeld modular varieties. Antoine Joux discussed the discrete logarithm problem in multiplicative groups of finite fields following his recent breakthrough. Finally Bernard Le Stum gave an introductory talk on rigid cohomology.

In addition to the invited speakers, there were more than forty talks covering a wide range of topics, such as estimates of the number of rational points of curves or higher dimensional varieties over finite fields, towers of global fields, algebraic geometric coding theory, abelian varieties, and public key cryptography. Certain topics, such as algebraic geometry codes, are among the historical themes of the conference, while others, such as the arithmetic of abelian varieties and curve based cryptography have appeared more recently in the scope of the conference. This emphasizes the continual evolution of the community. The articles of the present volume represent a selection of research presented at this conference.

We warmly thank all the speakers of the conference for their participation and the high quality of their presentations. We also express a deep gratitude to the CIRM's team Olivia Barbaroux, Muriel Milton and Laure Stefanini for their remarkable efficiency.

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AGCT • Bassa et al., Editors

This volume contains the proceedings of the 15th International Conference on Arithmetic, Geometry, Cryptography, and Coding Theory (AGCT), held at the Centre International de Rencontres Mathématiques in Marseille, France, from May 18–22, 2015.

Since the first meeting almost 30 years ago, the biennial AGCT meetings have been one of the main events bringing together researchers interested in explicit aspects of arithmetic geometry and applications to coding theory and cryptography. This volume contains original research articles reflecting recent developments in the field.

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