Arithmetic Geometry

Conference on Arithmetic Geometry with an Emphasis on Iwasawa Theory
March 15–18, 1993
Arizona State University

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The Conference on Algebraic Geometry with an Emphasis on Iwasawa Theory was held at Arizona State University, Tempe, Arizona, March 15–18, 1993.

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Preface

This book is the result of a research conference in arithmetic geometry which took place at Arizona State University in March 1993. The lectures at this conference were devoted to important recent advances in Iwasawa theory, elliptic curves, modular forms and modular curves, $p$-adic heights, $L$-functions, and the inverse Galois problem. In addition to expanded versions of many of the talks presented at the conference, this volume contains a previously unpublished letter of John Tate, written to J.-P. Serre in 1973. We thank Professors Tate and Serre for generously agreeing to the inclusion of it here.

We are grateful to all of the participants, and especially the speakers, for making the conference a success. We also thank Tonya Blair, Lydia Dancel, Bruce Long, Mary Sabel, and Marlene Salvato of the ASU Mathematics Department for their fine work in helping to organize the conference, and Craig Huneke, Donna Harmon and the staff at the AMS for their help with the preparation of this volume. Finally, we wish to acknowledge the financial support of the NSF and Arizona State University, which made travel to the conference possible for many of the participants.

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This book resulted from a research conference in arithmetic geometry held at Arizona State University in March 1993. The papers describe important recent advances in arithmetic geometry. Several articles deal with $p$-adic modular forms of half-integral weight and their roles in arithmetic geometry. The volume also contains material on the Iwasawa theory of cyclotomic fields, elliptic curves, and function fields, including $p$-adic $L$-functions and $p$-adic height pairings. Other articles focus on the inverse Galois problem, fields of definition of abelian varieties with real multiplication, and computation of torsion groups of elliptic curves. The volume also contains a previously unpublished letter of John Tate, written to J.-P. Serre in 1973, concerning Serre’s conjecture on Galois representations. With contributions by some of the leading experts in the field, this book provides a look at the state of the art in arithmetic geometry.