

Contents

About the cover: Rational curves on a K3 surface NOAM D. ELKIES	1
Curves	
Rational points on curves HENRI DARMON	7
Non-abelian descent and the generalized Fermat equation HUGO CHAPDELAINÉ	55
Merel's theorem on the boundedness of the torsion of elliptic curves MARUSIA REBOLLEDO	71
Generalized Fermat equations (d'après Halberstadt-Kraus) PIERRE CHAROLLOIS	83
Heegner points and Sylvester's conjecture SAMIT DASGUPTA and JOHN VOIGHT	91
Shimura curve computations JOHN VOIGHT	103
Computing Heegner points arising from Shimura curve parametrizations MATTHEW GREENBERG	115
The arithmetic of elliptic curves over imaginary quadratic fields and Stark-Heegner points MATTHEW GREENBERG	125
Lectures on modular symbols YURI I. MANIN	137
Surfaces	
Rational surfaces over nonclosed fields BRENDAN HASSETT	155
Non-abelian descent DAVID HARARI	211
Mordell-Weil Problem for Cubic Surfaces, Numerical Evidence BOGDAN VIOREANU	223

Higher-dimensional varieties

Algebraic varieties with many rational points YURI TSCHINKEL	243
Birational geometry for number theorists DAN ABRAMOVICH	335
Arithmetic over function fields JASON STARR	375
Galois + Équidistribution=Manin-Mumford NICOLAS RATAZZI and EMMANUEL ULLMO	419
The André-Oort conjecture for products of modular curves EMMANUEL ULLMO and ANDREI YAFAEV	431
Moduli of abelian varieties and p -divisible groups CHING-LI CHAI and FRANS OORT	441
Cartier isomorphism and Hodge Theory in the non-commutative case DMITRY KALEDIN	537