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Nota di contenuto	.-Preface.-Introduction -- List of Participants -- K3 and Enriques Surfaces (S. Kondo) -- Transcendental Methods in the Study of Algebraic Cycles with a Special Emphasis on Calabi–Yau Varieties (J.D. Lewis) -- Two Lectures on the Arithmetic of K3 Surfaces (M. Schütt) -- Modularity of Calabi–Yau Varieties (N. Yui) -- Explicit Algebraic Coverings of a Pointed Torus (A. Anema, J. Top) -- Elliptic Fibrations on the Modular Surface Associated to 1(8) -- Universal Kummer Families over Shimura Curves (A. Besser, R. Livné) -- Numerical Trivial Automorphisms of Enriques Surfaces in Arbitrary Characteristic (I.V. Dolgachev) -- Picard-Fuchs Equations of Special One-Parameter Families of Invertible Polynomials (S. Gähns) -- A Structure Theorem for Fibrations on Delsarte Surfaces (B. Heijne, R. Kloosterman) -- Fourier–Mukai Partners and Polarised K3 Surfaces (K. Hulek, D. Ploog) -- On a Family of K3 Surfaces with S4 Symmetry (D. Karp, J. Lewish, D. Moore, D. Skjorshammer, U. Witcher) -- K1ind of Elliptically Fibered K3 Surfaces (M. Kerr) -- A Note About Special Cycles on Moduli Spaces of K3 Surfaces (S. Kudla) -- Enriques Surfaces of Hutchinson–Göpel Type and Mathieu Automorphisms (S. Mukai, H. Ohashi) -- Quartic K3 Surfaces and Cremona Transformations (K. Oguiso) -- Invariants of Regular Models of the Product of Two Elliptical Curves at a Place of Multiplicative Reduction (C. Schoen) -- Dynamics of Special Points on

Intermediate Jacobians (X. Chen, J.D. Lewis) -- Calabi–Yau Conifold Expansions (S. Cynk, D. van Straten) -- Quadratic Twists of Rigid Calabi–Yau Threefolds over \mathbb{Q} (F.Q. Gouvêa, I. Kimming, N. Yui) -- Counting Sheaves on Calabi–Yau and Abelian Threefolds (M.G. Gulbrandsen) -- The Serge Cubic and Borcherds Products (S. Kondo) -- Quasi-Modular Forms Attached to Hodge Structures (H. Movasati) -- The Zero Locus of the Infinitesimal Invariable (G. Pearlstein, Ch. Schnell).

Sommario/riassunto

In recent years, research in K3 surfaces and Calabi–Yau varieties has seen spectacular progress from both the arithmetic and geometric points of view, which in turn continues to have a huge influence and impact in theoretical physics—in particular, in string theory. The workshop on Arithmetic and Geometry of K3 surfaces and Calabi–Yau threefolds, held at the Fields Institute (August 16–25, 2011), aimed to give a state-of-the-art survey of these new developments. This proceedings volume includes a representative sampling of the broad range of topics covered by the workshop. While the subjects range from arithmetic geometry through algebraic geometry and differential geometry to mathematical physics, the papers are naturally related by the common theme of Calabi–Yau varieties. With the large variety of branches of mathematics and mathematical physics touched upon, this area reveals many deep connections between subjects previously considered unrelated. Unlike most other conferences, the 2011 Calabi–Yau workshop started with three days of introductory lectures. A selection of four of these lectures is included in this volume. These lectures can be used as a starting point for graduate students and other junior researchers, or as a guide to the subject.
