ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

3. Number Theory and Arithmetic Algebraic Geometry

1991 MS Classification: 11, 14

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On some elliptic surfaces and elliptic curves related to discriminants of cubic or quartic polynomials

We associate to each discriminant $t \neq 0$ of a polynomial of degree $n \geq 1$ an elliptic curve E_t. For each polynomial of degree $n = 3, 4$, we construct a rational point on $E_t(\mathbb{Q})$ which is generically non torsion. For $n = 4$, we prove that $E_t \simeq C$, where C is the cubic associated by Gaàl, Pethö and Pohst to each quartic field. They also constructed a surface S connected to the cubic C. We compute the Kodaira dimension and the dimension of the Albanese variety of S and specify the class to which S belongs in the classification of algebraic surfaces. We also answer a question of Pethö, and give statistical results.