ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

3. Number Theory and Arithmetic Algebraic Geometry

1991 MS Classification: 11S40
Robinson, Margaret M., Mount Holyoke College
Igusa local zeta functions
If K is a p-adic completion of a number field and O_K is the ring of integers of K, then the Igusa local zeta function is defined for any $f(x)$ in $K[x_1, ..., x_n] - \{0\}$ and for $\mathrm{Re}(s) > 0$ as the following

$$Z(s) = \int_{O_K^n} |f(x)|_K^s dx,$$

in which dx is the Haar measure on K^n normalized such that $vol(O_K^n) = 1$. Results about the explicit form of the local zeta function will be given for for Fermat hypersurfaces of prime power exponent, for elliptic curves, and for zeta functions that are twisted by a non-trivial character χ. These results are work done by two different groups of undergraduates in the Summer Research Experiences for Undergraduates (REU) Program at Mount Holyoke College during the summers of 1995 and 1997.