

ALGEBRA
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*Generalized Borcherds Products and Two number theoretic
applications*

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Abstract: In his 1994 ICM lecture, Borcherds famously introduced an entirely new concept in the theory of modular forms. He established that modular forms with very special divisors can be explicitly constructed as infinite products. Motivated by problems in geometry, number theorists recognized a need for an extension of this theory to include a richer class of automorphic form. In joint work with Bruinier, the speaker has generalized Borcherds's construction to include modular forms whose divisors are the twisted Heegner divisors introduced in the 1980s by Gross and Zagier in their celebrated work on the Birch and Swinnerton-Dyer Conjecture.

This generalization, which depends on the new theory of harmonic Maass forms, has many applications. The speaker will illustrate the utility of these products by resolving open problems on the following topics:

1) Parity of the partition function 2) Birch and Swinnerton-Dyer Conjecture and ranks of elliptic curves.

Monday, February 8, 2010, 3:00 pm
Mathematics and Science Center: W201

MATHEMATICS AND COMPUTER SCIENCE
EMORY UNIVERSITY