MSRI–Evans Talk

Jan. 23   **David R. Morrison**, Dept. of Mathematics, Duke University
Orbifold cohomology and the McKay correspondence

String theory on manifolds with quotient singularities ("orbifolds") is as wellbehaved as string theory on nonsingular manifolds. Since various topological and geometric properties of nonsingular (Calabi-Yau) manifolds – e.g., cohomology groups or Hodge groups – can be computed using string theory, it is natural to try to understand the mathematical meaning of the corresponding computations in the singular case.

A full understanding requires a number of different mathematical tools, but many of them are closely related to the McKay correspondence and its generalizations. Originally an observation about the representation theory for finite subgroups of $SL(2, C)$, the McKay correspondence has been generalized in a number of directions, several of which are related to the mathematics of orbifold cohomology and Hodge theory.