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Pavel I Etingof* (etingof@math.mit.edu), Department of Mathematics, MIT, Cambridge, MA 02139. *Orbifold Hecke algebras.*

The classical Hecke algebra of a finite Coxeter group is the quotient of the braid group algebra by quadratic relations. I will explain that this definition can be vastly generalized. More specifically, I will attach a Hecke algebra $\mathcal{H}(X, G)$ to every orbifold X/G , where X is a simply connected complex manifold, and G a discrete group of holomorphic transformations of X . This algebra is a formal deformation of the group algebra $\mathbf{C}[G]$. The main result is that if $H^2(X, \mathbf{C}) = 0$ then $\mathcal{H}(X, G)$ is a **flat** deformation of the group algebra of G . This class of algebras includes many known Hecke algebras (cyclotomic Hecke algebras of complex reflection groups, affine, double affine Hecke algebras), and also generalized double affine Hecke algebras which provide quantizations of del Pezzo surfaces.

In a similar way one can define Hecke algebras which are deformations of group algebras of Coxeter groups. These algebras are flat iff the Coxeter group does not contain finite parabolic subgroups of rank 3 (this is shown in my joint work with E. Rains). (Received July 15, 2005)