1054-18-144 **Alexander E Hoffnung*** (alex@math.ucr.edu), 600 Central Ave #324, Riverside, CA 92507. *A categorification of the Hecke algebra.*

Given a Dynkin diagram and the finite field F_q, where q is a prime power, we get a finite algebraic group G_q. I will explain joint work with John Baez where we show how to construct a categorification of the Hecke algebra $H(G_q)$ associated to this data. This is an example of the Baez/Dolan/Trimble program of "Groupoidification", a method of promoting vector spaces to groupoids and linear operators to spans of groupoids. For example, given the A_2 Dynkin diagram, for which $G_q = SL(3, F_q)$, the spans over the G_q-set of complete flags in F_q^3 encode the relations of the Hecke algebra associated to $SL(3, F_q)$. Further, we will see how the 2-morphisms proving the relations for the Hecke algebra correspond to incidence relations in projective plane geometry. (Received September 11, 2009)