1162-16-85 **Van C. Nguyen***, U.S. Naval Academy, Department of Mathematics, Annapolis, MD 21402.
McKay matrices for finite-dimensional Hopf algebras.

In 1980s, McKay showed that for the finite subgroups G of SU_2, the (so-called McKay) matrices that record the result of tensoring the simple G-modules with the natural G-module $V = \mathbb{C}^2$ exactly correspond to the affine Cartan matrices of type A, D, E. This result, subsequently referred to as the *McKay correspondence*, has been an inspiration for much work on a host of topics in singularity theory, group theory, orbifolds, and many other subjects.

Generalizing from the group algebra case, the purpose of this talk is to study the McKay matrices defined over an arbitrary finite-dimensional Hopf algebra. For a finite-dimensional Hopf algebra A, the McKay matrix M_V of an A-module V encodes the relations for tensoring the simple A-modules with V. We prove general results about McKay matrices, their eigenvalues, and their (left and right) eigenvectors by using the coproduct and the characters of simple and projective A-modules. We illustrate these results for the Drinfeld double D_n of the Taft algebra by deriving expressions for the eigenvalues and eigenvectors of M_V in terms of several kinds of Chebyshev polynomials.

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