

Meeting: 1003, Atlanta, Georgia, SS 8A, AMS Special Session on Modular Representation Theory of Finite and Algebraic Groups, I

1003-20-907 **Andrew R Francis*** (a.francis@uws.edu.au), School of Quant. Methods and Math. Sciences, University of Western Sydney, Locked Bag 1797, Penrith South DC, NSW 1797, Australia, and **Lenny K Jones**. *The square root of the centre of a Hecke algebra of type A.*

It is well-known that the square of the element of the Hecke algebra corresponding to the longest word of the symmetric group is central—a fact arising from links with the braid group for instance. In this talk we investigate non-central elements of the integral Hecke algebra of the symmetric group whose squares are central.

This investigation takes two paths. One is to establish the existence of certain generic elements of the square root such as the element corresponding to the longest word. This includes establishing that these generic elements generate a commutative subalgebra of the Hecke algebra. Being central, the square of a square root can be written in terms of one of the bases or generating sets for the centre, such as the “minimal” basis or the set of elementary symmetric functions of Murphy elements. So, our second avenue of investigation is to study how the squares of these square roots can be written as linear combinations of such basis elements. It turns out, in some cases, that these expressions are surprisingly elegant, particularly in the case of the square of the longest word. (Received September 30, 2004)