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Sinead Lyle and **Oliver Ruff*** (oruff@kent.edu). *Weight 2 Blocks of Ariki-Koike Algebras*. Preliminary report.

The Ariki-Koike algebra $\mathcal{H}_{n,r}$ is a deformation of the group algebra of the complex reflection group $G(r, 1, n)$; the Hecke algebras of types A and B occur as special cases when $r = 1$ and $r = 2$ respectively. Since $\mathcal{H}_{n,r}$ is cellular, there is a natural theory of Specht modules (labelled here by multipartitions of n into r parts), some of whose irreducible cosocles yield a complete collection of simple modules. The multipartitions that label the simple modules are said to be *Kleshchev*. An important problem in the representation theory of such algebras is to find the decomposition numbers: that is, the multiplicity with which each simple module occurs in a given Specht module.

The notion of *weight* for partitions has been extended to multipartitions by Fayers; it provides an invariant that measures the complexity of a block of $\mathcal{H}_{n,r}$. Weight 2 blocks of Hecke algebras of type A and type B have been described by Richards and Fayers respectively. In this talk we consider weight 2 blocks of $\mathcal{H}_{n,r}$ for arbitrary r – classifying the Kleshchev multipartitions, computing the decomposition numbers, and discussing generalizations to blocks of higher weight. (Received September 04, 2012)