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Sinead Lyle and **Oliver Ruff*** (oruff@kent.edu), 6000 Frank Ave NW, North Canton, OH 44720. *On Graded Decomposition Numbers for Ariki-Koike Algebras.*

The Ariki-Koike algebras $\mathcal{H}_{n,r}$ generalize the Hecke algebras of type A and B and arise in a variety of other natural contexts, including categorification of Kac-Moody algebras. The main open problem in their representation theory is to calculate the decomposition numbers, which is to say the composition multiplicity of the simple modules in each Specht module. In general, these are difficult to calculate.

The *weight* of a block, defined by Fayers, gives a measure of its complexity (generalizing the classical notion of “weight” in type A). When $r = 2$, which is when $\mathcal{H}_{n,r}$ coincides with the Hecke algebra of type B, Fayers has also considered the decomposition numbers for blocks of weight 2. We deal with the case when $r > 2$ and complete the picture for the blocks of weight 2, as well obtaining information about a certain class of blocks having higher weight. Our work includes an explicit combinatorial description of each block’s contents as well as a closed formula for some of the decomposition numbers. (Received February 11, 2014)