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Holly Swisher* (swisherh@math.oregonstate.edu), Department of Mathematics, Kidder Hall 368, Oregon State University, Corvallis, OR 97331-4605, and **Joanna Furno** and **Patrick Waters**. *An investigation of k -component multipartitions*. Preliminary report.

Multipartitions are generalizations of partitions that have significance in the representation of simple Lie algebras, but are also connected to the theory of modular forms as well as being arithmetically interesting in their own right. Andrews has recently found an infinite family of congruences for the multipartition function $P_k(n)$ and has connected one of the bipartition ($k = 2$) congruences to the famed crank statistic. Here we further explore this subject, focusing on the connection to modular forms. In particular, we consider generalizing the crank to k -component multipartitions and its relationship to congruences. We also investigate a geometric generalization of Ferrers diagrams, and how this leads to an interesting class of multipartitions and identities. (Received September 19, 2007)