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**Aimee S.A. Johnson\*** ([aimee@swarthmore.edu](mailto:aimee@swarthmore.edu)), Department of Mathematics and Statistics,  
Swarthmore College, Swarthmore, PA 19081. *Speedups of ergodic  $\mathbb{Z}^d$ -actions.*

Arnoux, Ornstein, and Weiss showed in 1985 that given any two aperiodic measure-preserving transformations  $(X, \mathcal{X}, \mu, T)$  and  $(Y, \mathcal{Y}, \nu, S)$ , one can find a measurable function  $p : X \rightarrow \mathbb{N}$  such that, by setting  $\bar{T}(x) = T^{p(x)}(x)$ ,  $(X, \mathcal{X}, \mu, \bar{T})$  is isomorphic to  $(Y, \mathcal{Y}, \nu, S)$ . The function  $\bar{T}$  is called a “speedup” of  $T$  and their result showed that it is always possible to “speed up” one such transformation to “look like” another. Babichev, Burton, and Fieldsteel showed in 2013 that for extensions by a locally compact, second countable group, the function  $p$  can be taken to be measurable with respect to the base factor. They also consider  $n$ -point extensions and use a conjugacy class of subgroups of the symmetric group on  $n$  symbols to characterize which  $n$ -point extensions can be sped up to look like another.

The above results concern dynamical systems generated by a single transformation, i.e.  $\mathbb{Z}$ -actions. Based on joint work with David McClendon (Ferris State University), in this talk we will set up the situation for  $\mathbb{Z}^d$ -actions and discuss generalizations of the above results. (Received July 28, 2015)