1056-37-1847 **Andrey Babichev*** (ababichev@wesleyan.edu), Department of Mathematics, 5245 North Backer Avenue M/S PB108, Fresno, CA 93740-8001, and **Adam Fieldsteel** (afieldsteel@wesleyan.edu). *Speedups of Ergodic Group Extensions.*

Let $T : X \to X$ be an invertible measure preserving transformation of the standard Lebesgue space X (segment [0,1] with the standard measure), and let $k : X \to \mathbb{N}$ be a measurable function such that the variable power $T^k : x \mapsto T^{k(x)}(x)$ is an invertible transformation as well. Then we say that T^k is a *speedup* of T. In simpler terms, under a speedup points jump forward along their orbits, splitting them into suborbits. If $S : X \times G \to X \times G$ is an ergodic extension of T by rotations of a compact group G (so $S : (x, g) \mapsto (T(x), \sigma(x)g)$ for some skewing function $\sigma : X \to G$) and k is as above, we say that $S_1^k : (x, g) \mapsto S_1^{k(x)}(x, g)$ is a *factor speedup* of S.

Let now S_1 and S_2 be ergodic extentions of finite measure preserving transformations T_1 and T_2 by rotations of a compact group G. We prove that there is a factor speedup of S_1 that is isomorphic to S_2 by an isomorphism that respects the action of G on fibers. In the case $G = \{e\}$ this recovers the theorem of Arnoux, Ornstein and Weiss that given any two ergodic measure preserving transformations, there is a speedup of the first that is isomorphic to the second. (Received September 22, 2009)