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 $S^k_1 : (x, g) \mapsto S^{k(x)}_1(x, g)$ is a factor speedup of $S$.

Let now $S_1$ and $S_2$ be ergodic extensions 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)