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Alfred Gérard Noël* (alfred.noel@umb.edu) and **Steven Glenn Jackson**. *Invariant Theory of the Enveloping Algebra*. Preliminary report.

A theorem of Harish-Chandra says that an irreducible (\mathfrak{g}, K) -module is determined up to infinitesimal equivalence by the action of the centralizer of K in the enveloping algebra of \mathfrak{g} , $U_{\mathfrak{g}}^K$, on any K -primary component.

This work explains how to exploit the Kostant-Rallis theorem in order to accelerate a computationally intensive algorithm of Kostant which computes a set of generators for $U_{\mathfrak{g}}^K$.

We illustrate our approach by computing generators for several unsolved cases such as $SL(3, \mathbb{R})$, $SL(4, \mathbb{R})$, $Sp(4, \mathbb{R})$ and the split real form of G_2 . (Received January 20, 2009)