1035-22-193 **Steven Glenn Jackson** (`jackson@math.umb.edu`) and **Alfred G. Noël*** (`anoel@math.umb.edu`), University of Massachusetts Boston, Department of Mathematics, Boston, MA 02125-3393. *A new approach to computing generators for the centralizer of K in the universal enveloping algebra of $\mathfrak{g}$.* Preliminary report.

Let (G, K) be the complex symmetric pair associated with a real reductive Lie group G_0, and let $\mathfrak{U}(\mathfrak{g})^K$ denote the centralizer of K in the universal enveloping algebra $\mathfrak{U}(\mathfrak{g})$. By a theorem of Harish-Chandra an irreducible $(\mathfrak{g}, K)$-module is determined up to infinitesimal equivalence by the action of $\mathfrak{U}(\mathfrak{g})^K$ on any K-primary component.

For this reason, the problem of determining generators for $\mathfrak{U}(\mathfrak{g})^K$ has been considered by several authors such as Kostant, Tirao, Lepowsky, Zhu and others. In particular, complete results have been obtained only for $G_0 = SU(2,2)$ and the families $G_0 = SU(n,1)$ and $G_0 = SO(n,1)$. Recently, Kostant proved that $\mathfrak{U}(\mathfrak{g})^K$ is generated by elements of filtration degree $\binom{2\dim\mathfrak{g}}{2}\dim\mathfrak{p}$, reducing the general problem to a finite but computationally intensive algorithm.

We describe a method by which Kostant's algorithm can be significantly accelerated by exploiting the Kostant-Rallis theorem via a certain homomorphism from $\mathfrak{U}(\mathfrak{g})^K$ to the ring of regular functions on the nilpotent cone in $\mathfrak{p}$. (Received August 15, 2007)