

Meeting: 1004, Bowling Green, Kentucky, SS 15A, Special Session on Recent Advances in Noncommutative Algebra

1004-17-154 **Jeb F. Willenbring*** (jw@uwm.edu), Department of Mathematical Sciences, P. O. Box 0413, Milwaukee, WI 53211-1512. *Remarks on the K -invariants in $\mathcal{U}(\mathfrak{g})$* . Preliminary report.

The adjoint action of a reductive group G on its Lie algebra \mathfrak{g} induces an action on the universal enveloping algebra $\mathcal{U}(\mathfrak{g})$. The structure of $\mathcal{U}(\mathfrak{g})$ as a representation of G follows from Kostant's theory of harmonic polynomials on \mathfrak{g} . We approach the problem of understanding the restriction of the G action on $\mathcal{U}(\mathfrak{g})$ to a symmetric subgroup K . In particular, we focus on the K -invariant subalgebra, $\mathcal{U}(\mathfrak{g})^K$. It is well established that $\mathcal{U}(\mathfrak{g})^K$ has an extraordinarily complicated ring structure, while at the same time, of fundamental importance to the structure of admissible representations of real reductive groups.

In this talk, we present preliminary results on the stability of the Hilbert series of the associated graded K -invariant subalgebra. A striking feature of these results is that the stable Hilbert series of one symmetric pair coincides with that of another. (Received January 23, 2005)