1012-20-200   **Bangming Deng** and **Zongzhu Lin*** (`zlin@math.ksu.edu`), Department of Mathematics, Cardwell Hall 138, Kansas State University, Manhattan, KS 66506. *Nilpotent Orbits, Symplectic and Orthogonal Representations of Quivers.* Preliminary report.

Given a reductive algebraic group G over an algebraically closed field and a cocharacter $\chi : G_m \to G$, there is an associated graded Lie algebra structure on the Lie algebra $\mathfrak{g} = Lie(G) = \sum \mathfrak{g}_r$. The centralizer G_0 of χ acts on each $\mathfrak{g}_r$. Lusztig studied the G_0-equivariant simple perverse sheaves on $\mathfrak{g}_r$.

For each classical reductive group $G = SP_{2l}$ or O_n and $r > 0$ we classify all G_0-orbits in $\mathfrak{g}_r$ in terms of certain partitions parameterizing the isomorphism classes of symplectic (or orthogonal) representations of a specially constructed quiver depending on n, χ and r. The centralizer group of each orbit, its reductive part, and its component group will also be computed in terms of automorphism groups of representations of quivers. This will provide an explicit combinatorial classification of all G_0-equivariant simple perverse sheaves on $\mathfrak{g}$. For general linear groups, the results are known in terms of canonical basis of quantized enveloping algebras of certain finite dimensional semisimple Lie algebras. (Received September 20, 2005)

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