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Pamela Estephania Harris* (pamela.harris@usja.edu), 646 Swift Road, West Point, NY 10996, and **Erik Insko** and **Lauren Kelly Williams**. *The adjoint representation of a classical Lie algebra and the support of Kostant's weight multiplicity formula.*

Even though weight multiplicity formulas, such as Kostant's formula, exist their computational use is extremely cumbersome. In fact, even in cases when the multiplicity is well understood, the number of terms considered in Kostant's formula is factorial in the rank of the Lie algebra and the value of the partition function is unknown. In this talk, we address the difficult question: *What are the contributing terms to the multiplicity of the zero-weight in the adjoint representation of a finite-dimensional classical Lie algebra?* We describe and enumerate the cardinalities of these sets (through linear homogeneous recurrence relations with constant coefficients) for the classical Lie algebras $\mathfrak{so}_{2r+1}(\mathbb{C})$, $\mathfrak{sp}_{2r}(\mathbb{C})$, and $\mathfrak{so}_{2r}(\mathbb{C})$. (Received September 04, 2014)