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**Kenyon J Platt\*** (platt@math.byu.edu), 310 TMCB, Department of Mathematics, Brigham Young University, Provo, UT 84602, and **Bobbe J Cooper**. *Nilpotent Orbit Theory and Infinitesimal Blocks of Parabolic Category  $\mathcal{O}$* . Preliminary report.

Let  $\mathfrak{g}$  be a simple Lie algebra over the complex numbers. Parabolic category  $\mathcal{O}_S$  is a generalization of the usual BGG category  $\mathcal{O}$ . This category of  $\mathfrak{g}$ -modules decomposes into certain subcategories, called infinitesimal blocks, which have some nice properties. For example, each block has at most finitely many simple modules. In fact, some contain no simple modules at all. We will discuss a relationship between the nilpotent orbits of  $\mathfrak{g}$  and the extensions between simple modules in a given infinitesimal block of category  $\mathcal{O}_S$ . (Received August 19, 2009)