1067-17-454 **Toshihisa Kubo*** (toskubo@math.okstate.edu), 401 Mathematical Science, Oklahoma State University, Stillwater, OK 74078. *Conformally invariant systems of maximal parabolic of two-step nilpotent type.*

The wave operator $\Box$ in Minkowski space $\mathbf{R}^{3,1}$ is a classical example of a conformally invariant differential operator. The Lie algebra $\mathfrak{so}(4,2)$ acts on $\mathbf{R}^{3,1}$ via a multiplier representation σ. When acting on sections of an appropriate bundle over $\mathbf{R}^{3,1}$,the elements of $\mathfrak{so}(4,2)$ are symmetries of the wave operator $\Box$; that is, for $X \in \mathfrak{so}(4,2)$, we have

$$[\sigma(X), \Box] = C(X)\Box$$

with $C(X)$ a smooth function on $\mathbf{R}^{3,1}$.

The notion of conformal invariance of operators was generalized by Kostant in 1970's. Recently, Barchini, Kable, and Zierau introduce a notion of conformal invariance for systems of differential operators. In this talk we construct conformally invariant systems on a two-step nilpotent parabolic setting. We also show that these systems yield explicit $\mathcal{U}(\mathfrak{g})$-homomorphisms between certain generalized Verma modules. (Received September 04, 2010)