1051-17-41 **Charles H Conley*** (conley@unt.edu), Department of Mathematics, Denton, TX 76203.
Modules of differential operators for vector field Lie algebras.

The Lie algebra $\mathrm{Vec}(\mathbb{R}^m)$ of vector fields on Euclidean space contains the projective Lie algebra $\mathfrak{sl}(m+1)$ as a maximal subalgebra. The space of differential operators on $\mathbb{R}^m$ is naturally a module under $\mathrm{Vec}(\mathbb{R}^m)$. In this talk we will discuss the decomposition of this module under the projective subalgebra, and the use of this decomposition in analyzing the action of $\mathrm{Vec}(\mathbb{R}^m)$. We will also mention some generalizations: the module of differential operators can be generalized to modules of differential operators between arbitrary tensor field modules, and in odd dimensions, $\mathrm{Vec}(\mathbb{R}^m)$ can be replaced by the Lie algebra of contact vector fields, in which case the projective subalgebra is replaced by the conformal subalgebra, a copy of $\mathfrak{sp}(m+1)$. (Received August 03, 2009)