

Meeting: 1003, Atlanta, Georgia, SS 23A, AMS Special Session on Representations of Lie Algebras, I

1003-17-56 **Meena Sahai** and **Vivek Sahai*** (vivek_sahai@sify.com), Department of Mathematics and Astronomy, Lucknow University, 226007 Lucknow, UP, India. *On models of irreducible q -representations of the Lie algebra $\mathcal{G}(0, 1)$.*

The irreducible representations of the 4-dimensional Lie algebra $\mathcal{G}(0, 1)$ are given in Miller (Lie Theory and Special Functions, Academic Press, 1968). However, the idea of irreducible q -representations of a Lie algebra was first introduced by Manocha (Appl. Anal., **37**(1990), 19-47) and models of irreducible q -representations of $sl(2, C)$ were constructed. The present paper develops irreducible q -representations of the Lie algebra $\mathcal{G}(0, 1)$. Rather than considering a deformation of the Lie algebra, leading to a so-called quantum algebra, the approach taken here follows the viewpoint of Manocha (Appl. Anal., **37**(1990), 19-47) and Sahai (Proc. Amer. Math. Soc., **127**(1999), 3201-3213) and defines the deformation of a representation of an ordinary Lie algebra. After dealing with some preliminaries, the definition of q -representations of $\mathcal{G}(0, 1)$ is given, depending upon a parameter u . We then consider only the irreducible multiplicity free representations. This gives rise to a classification theorem for irreducible q -representations of $\mathcal{G}(0, 1)$. We also construct one and two variable models of this Lie algebra in terms of q -derivative operators and give an application of this technique. (Received July 22, 2004)