

1037-17-295

**Elena Poletaeva\*** (elenap@utpa.edu), Department of Mathematics, University of Texas-Pan American, Edinburg, TX 78539. *On exceptional superconformal algebras.*

Superconformal algebras are supergeneralizations of the Virasoro algebra. They play an important role in the string theory, conformal field theory and mirror symmetry, and have been extensively studied by mathematicians and physicists.

The contact superalgebras  $K(2)$  and  $K'(4)$  are well-known to physicists as the centerless  $N = 2$  and big  $N = 4$  superconformal algebras.

A remarkable property of  $\hat{K}'(4)$  and the exceptional superconformal algebra  $CK_6$  is that they admit embeddings into the Lie superalgebras of pseudodifferential symbols on the circle, extended by  $N = 2$  and 3 odd variables, and there exist one-parameter families of “small” irreducible representations, associated with these embeddings.

For the zero value of the parameter, this gives realizations of these superalgebras as subsuperalgebras of matrices of size  $2^N$  over a Weyl algebra. The general construction of such matrix realizations of  $K(2)$ ,  $\hat{K}'(4)$  and  $CK_6$  is connected with the spin representation of  $o(2N + 1, C)$  for  $N = 1, 2, 3$ , and there is no such a realization of  $K(2N)$  for  $N \geq 4$ .

We also obtain a realization of the family of simple exceptional finite-dimensional Lie superalgebras  $D(2, 1; \alpha)$  related to  $K(4)$ , as matrices over a Weyl algebra. (Received February 04, 2008)