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Alexander Rozenblyum* (ARozenblyum@CityTech.Cuny.Edu), Mathematics Department, New York City College of Technology, 300 Jay Street, Brooklyn, NY 11201. *q-orthogonal polynomials related to representations of the quantum group $U_q(so(4))$.*

It is known that representations of the groups $SO(3)$ and $SO(4)$ are related to Krawtchouk and dual Hahn polynomials respectively [1]. In this talk we present some results on orthogonal polynomials related to irreducible representations of the classical type of the q -deformed algebra $U_q(so(4))$. These polynomials can be treated as q -analogs of dual Hahn polynomials. The method of study is similar to that developed for the group $SO(n)$ in [1], and consists in the diagonalization of the corresponding infinitesimal operator (generator) of representation. We consider the main properties of q -analogs of dual Hahn polynomials such as the q -difference equation of the Sturm-Liouville type, the weight function, the recurrence relation, the explicit formula in terms of q -numbers. These results are used to construct in explicit form the matrix of the operator connecting the Gel'fand-Tsetlin and "weight" bases in the representation space.

References

1. A. V. Rozenblyum, Representations of Lie Groups and Multidimensional Special Functions, Acta Applicandae Mathematicae, 29 (1992), pp. 171 - 240. (Received August 04, 2005)