1017-33-152   **Alexander Rozenblyum*** (`ARozenblyum@Citytech.cuny.edu`), Mathematics Department, New York City College of Technology, CUNY, 300 Jay Street, Brooklyn, NY 11201. *Representations of quantum algebras $U_q(so(3))$ and $U_q(so(4))$ and q-orthogonal polynomials.*

Quantum algebras $U_q(so(3))$ and $U_q(so(4))$ are q-deformations of the classical algebras $so(3)$ and $so(4)$ respectively. It is known [1] that representations of classical algebras lead to certain types of discrete orthogonal polynomials. In particular, representations of algebras $so(3)$ and $so(4)$ are related to Krawtchouk and dual Hahn polynomials. In the presented talk we discuss q-analogs of these polynomials that are related to representations of quantum algebras $U_q(so(3))$ and $U_q(so(4))$. The method we use is similar to that used in [2]. The main results are difference equations for these polynomials, the weight functions, the recurrence relations, the explicit formulas in terms of q-numbers. The obtained results allow the construction in explicit form of the matrix of operators connecting the bases in which generators of representations are diagonal.

References

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

2. A. Rozenblyum, Representations of the q-deformed algebras $U_q(so(3))$ and $U_q(so(5))$ and q-orthogonal polynomials, J. Math. Phys. 46 (2005), pp. 123508 1 - 14. (Received February 19, 2006)