ON RECURRENCE RELATIONS FOR RADIAL WAVE FUNCTIONS FOR THE N-TH DIMENSIONAL OSCILLATORS AND HYDROGENLIKE ATOMS: ANALYTICAL AND NUMERICAL STUDY[*]

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Abstract. Using a general procedure for finding recurrence relations for hypergeometric functions and polynomials introduced by Cardoso et al. [J. Phys. A, 36 (2003), pp. 2055-2068] we obtain some new recurrence relations for the radial wave functions of the N-th dimensional isotropic harmonic oscillators as well as the hydrogenlike atoms. A numerical analysis of such recurrences is also presented.

Key words. wave functions, linear recurrence relations, Laguerre polynomials

AMS subject classifications. 33C45, 11B37, 81V45, 81Q99