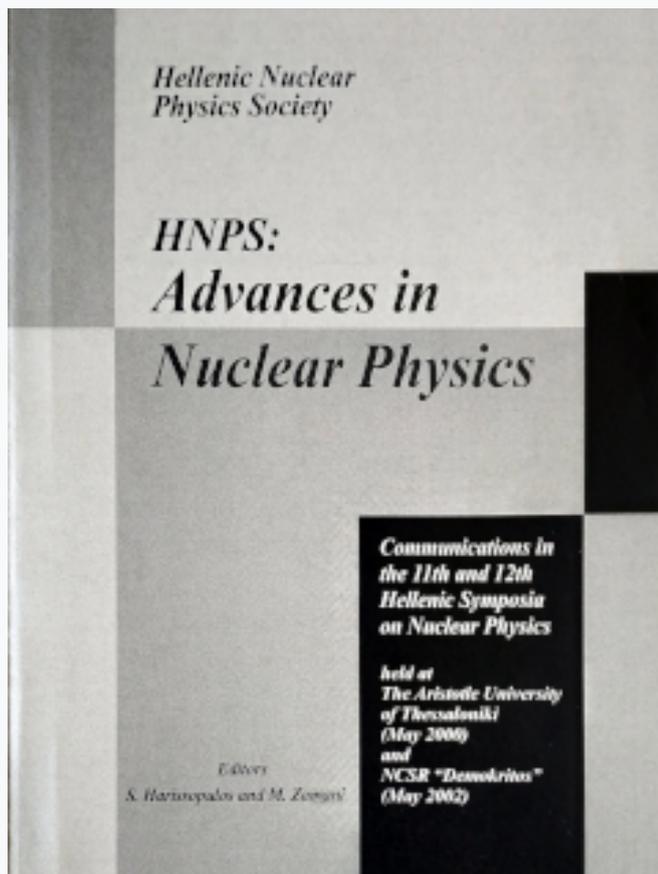


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Quantum Groups in Nuclear Spectra and in Metal Clusters

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Abstract

Quantum algebras (quantum groups), which are nonlinear generalizations of the usual Lie algebras, provide a rich variety of symmetries finding applications in the description of several physical systems [1]. Using irreducible tensor operators under $su_q(2)$ a rotationally invariant Hamiltonian which provides a good description of nuclear rotational spectra is constructed and its relation to existing nuclear models is considered. Using the same techniques a 3-dimensional q -deformed harmonic oscillator with $u_q(3) \supset so_q(3)$ symmetry is constructed, compared to the modified oscillator of Nilsson, and used for the successful description of magic numbers [2] and supershells [3] in metal clusters.

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