

N=4 Supersymmetric Morse Oscillator and Its Spectrum-Generating Algebra

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Abstract: In this paper N=4 supersymmetry of generalized Morse oscillators in one dimension is studied. Both bound states and scattering states of its four superpartner Hamiltonians are analyzed by using unitary irreducible representations of the noncompact Lie algebra $su(1,1)$. The spectrum-generating algebra governing the Hamiltonian of the N=4 supersymmetric Morse oscillator is shown to be connected with the realization of Lie superalgebra $osp(1,2)$ or $B(0,1)$ in terms of the variables of a supersymmetric two-dimensional harmonic oscillator.

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Key words: generalized Morse oscillator, supersymmetric quantum mechanics, $su(1,1)$, $osp(1,2)$

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