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Abstracts of Short Communications and Posters

Section:

11. Mathematical Physics

1991 MS Classification: Orthogonal Polynomials

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On Schrödinger-Hermite Operators in Lattice Quantum Mechanics

Starting from the $q-$Heisenberg algebra, we derive from a few abstract principles a broad class of Schrödinger operators in lattice quantum mechanics for which one can determine explicit eigenvalues and spectral properties. This happens by algebras of creators and annihilators. Generalized inhomogeneous $q-$discrete Hermite polynomials occur by their recurrence relations. In this framework we obtain an amazing result, discovered by Christian Berg recently by different methods: The orthogonality measure for $q-$discrete Hermite polynomials of type II is in general not uniquely determined on $q-$exponential lattices.