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Semiunitary Transformation and Isospectral Hamiltonians in Arbitrary Dimensional Space

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Abstract: By means of the complex Clifford algebra, a new realization of multi-dimensional semiunitary transformation is put forward and then applied to studying the isospectrality of nonrelativistic Hamiltonians of multi-dimensional quantum mechanical systems, in which the generalized Pauli coupling interaction and spin-orbit coupling interaction appear naturally. Moreover, it is shown that the semiunitary operators, together with the Hamiltonian of quantum mechanical system, satisfy the polynomially-deformed angular momentum algebra.

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