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Solution of the Schrödinger Equation with One and Two Dimensional Double-well Potentials

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Abstract: The Schrödinger equation with one and two dimensional potentials are solved in the framework of the $sl_2(\mathbb{R})$ Lie algebra. Eigenfunctions of the Schrödinger equation for various asymmetric double-well potentials have been determined and the eigenstates are expressed in terms of the orthogonal polynomials. The solution of the double-well potential in two dimension have been analyzed.

Key Words: double-well potentials, exact solution, quantum formalism

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