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Collective excitations in even-even nuclei with a stepped infinite square well potential

A new solution for the Bohr Hamiltonian is proposed for an infinite square well potential in the axial deformation variable with an adjustable step [1]. The centrifugal contribution transforms the stepped potential into an effective double-pocket potential, making it suitable for treating shape coexistence phenomena [2,3,4]. The general model characteristics are studied as a function of the height and the width of the additional step. The description of the low-lying states from the 114-124Te nuclei is presented as a numerical application of the model.

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