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RESONANT TUNNELING OF A FEW-BODY CLUSTER THROUGH REPULSIVE BARRIERS

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A model for quantum tunnelling of a cluster comprised of particles, interacting via oscillator-type potential, through short-range repulsive barrier potentials is introduced in symmetrized-coordinate representation and numerically studied. A method for symmetrizing or antisymmetrizing harmonic oscillator basis functions in new symmetrized coordinates is described. The effect of quantum transparency, manifesting itself in nonmonotonic resonance-type dependence of the transmission coefficient upon the energy of the particles, is analyzed. It is shown that the total transmission coefficient demonstrates resonance behavior due to the existence of barrier quasistationary states imbedded in the continuum.