THE GROUND STATE FOUR DIMENSIONAL MORPHED POTENTIALS OF HBr AND HI DIMERS

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The assigned rotational-tunneling transitions including quadrupole substructure of $H^{79}Br$-$H^{81}Br$ are combined with previously recorded rovibrational infrared and microwave data, to provide a basis for optimizing a ground state four-dimensional morphed potential with quantifiable uncertainties. The determined potential minimum has a value V = -644.0 cm^{-1}at the geometry R = 4.04 Å, θ_1 = 16.9°, θ_2 = 108.3°, and ϕ = 180.0°. The peak of the minimum energy path between the two equivalent minima occurs at V = -571.2 cm^{-1}, leading to a barrier height of 72.8 cm^{-1}. A corresponding investigation for the HI dimer will also be presented.