

Abstract Submitted
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The Born Oppenheimer-Potential for the Hydrogen Bond in the H₅O₂⁺ Complex: Comparison of Theories and Experiment NINA VERDAL, Syracuse University, BRUCE HUDSON, Syracuse University, GEORGE REITER, University of Houston — The Born-Oppenheimer potential surface for motion of the central H atom in the hydrogen bond in the H₅O₂⁺ ion is of considerable interest. This quantity has been elusive experimentally and computations are of unknown reliability. By measuring the momentum distribution of the protons in the centrosymmetric aquonium perchlorate, H₅O₂⁺ ClO₄⁻, and subtracting the ice-like contribution from the non-hydrogen bonded protons, we are able to measure the momentum distribution of the proton in the bond. This distribution is calculated for several ab-initio treatments of the potential surface and compared with the measurements as a means of distinguishing between these methods.

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