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Measurement of the Born-Oppenheimer Potential in a Superprotonic Conductor Using Deep Inelastic Neutron Scattering GEORGE REITER, DIRAR HOMOUZ, University of Houston, JUERGEN ECKERT, Univ. California at Santa Barbara, ROBERT BLINC, Institute Josef Stefan, Lubljana, PHIL PLATZMAN, Lucent Technology — The momentum distribution of the proton in the superionic conductor Rb3H(SO4)2 is measured using Deep Inelastic Neutron Scattering with the Vesuvio Instrument at ISIS.This material is well suited to a single particle interpretation of the momentum distribution, and the results have been used to extract a direct measurement of the full 3-D Born-Oppenheimer potential surface at 10K, 70K and 102K. We find that there is significant variation of the potential surface in the direction of the bond as the temperature is varied, with the proton becoming more confined in this direction at higher temperatures

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