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Fragmentation of H_2O by 1 – 5 keV He^{2+} ions: Experiment and Theory N. STOLTERFOHT[1], Physics Department, University of Florida, Gainesville, FL 32611, R. HELLHAMMER, P. SOBOCINSKI, Hahn-Meitner-Institut, 14109 Berlin, Germany, R. CABRERA-TRUJILLO, Y. OHRN, E. DEUMENS, J. SABIN, Physics Department, University of Florida, Gainesville, FL 32611
— Fragmentation of H_2O molecules induced by $^3He^{2+}$ impact was investigated experimentally as a function of the energy in the range from 1-5 keV. Collisions at large impact parameters are found to produce fragment protons with energies centered around peaks at 6 eV and 15 eV. The H^+ fragments were detected in the angular range from 25° to 135° with respect to the incident beam direction. Absolute fragmentation cross sections $d\sigma/d\Omega$, differential in the emission angle are found to be anisotropic, with protons preferentially emitted at angles near 90°. In addition to the experiments, we performed quantum-mechanical calculations to understand the fragmentation mechanisms producing protons at preferred energies and angles. The theoretical results are obtained using the Electron-Nuclear Dynamics formalism (END), which solves the time-dependent Schrödinger equation.

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