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Nuclear Dynamics of $H^+ + H^+$ Fragmentation in NH_3 Following Direct Single-Photon Double Photoionization at 61.54eV. KIRK LARSEN, University of California, Berkeley, SAIJOSCHA HECK, AVERELL GATTON, WAEL ISKANDAR, ELIO G. CHAMPENOIS, Lawrence Berkeley National Laboratory, RICHARD STROM, Auburn University, TRAVIS SEVERT, BETHANY JOCHIM, Kansas State University, DYLAN REEDY, JOSHUA B. WILLIAMS, University of Nevada, Reno, ZACHARY STREETER, University of California, Davis, THOMAS N. RESCIGNO, Lawrence Berkeley National Laboratory, C. WILLIAM MCCURDY, University of California, Davis, ROBERT R. LUCCHESE, DANIEL S. SLAUGHTER, Lawrence Berkeley National Laboratory, ITZIK BEN-ITZHAK, Kansas State University, THORSTEN WEBER, Lawrence Berkeley National Laboratory — We report measurements on the $H^+ + H^+$ fragmentation pathways in neutral NH_3 following direct single-photon double photoionization at 61.54eV, where the two photoelectrons and two protons are measured in coincidence using 3-D momentum imaging. We observe four dication electronic states which contribute to $H^+ + H^+$ fragmentation, three of which exhibit equal energy sharing between the two protons, while the third exhibits strongly unequal energy sharing. We tentatively attribute the unequal proton energy sharing feature to multi-step fragmentation, while the other three equal proton energy sharing features are attributed to single-step fragmentation. Molecular plane proton momentum distributions for these states provide insight into the nuclear dynamics that emerge following direct single-photon double photoionization.

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