

Abstract Submitted
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Intensity-dependent branching ratio of ND⁺ dissociation in an intense laser field.¹ J. MCKENNA, A.M. SAYLER, B. GAIRE, NORA G. JOHNSON, E. PARKE, K.D. CARNES, B.D. ESRY, I. BEN-ITZHAK, J.R. Macdonald Laboratory, Department of Physics, Kansas State University — We investigate the fragmentation of an ND⁺ molecular ion beam induced by intense femtosecond (40 fs) 795nm laser pulses. The individual dissociation channels (N⁺ + D and N + D⁺) of this astrophysically important molecule are uniquely separated by a coincidence measurement of the fragments. We observe that the branching ratio of the channels has a strong dependence on laser field strength over the intensity range 2×10^{13} – 3×10^{15} W/cm². Additionally, using measurements of the kinetic energy release and angular distributions for these channels as a guide, we identify the most probable dissociation pathways.

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Jarlath McKenna
J.R. Macdonald Laboratory, Department of Physics, Kansas State University

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