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**Ionization of  $N_2^+$  and  $O_2^+$  beams in femtosecond intense laser fields.**<sup>1</sup> A.M. SAYLER, B. GAIRE, NORA G. JOHNSON, M. LEONARD, E. PARKE, K.D. CARNES, I. BEN-ITZHAK, J. R. Macdonald Laboratory, Department of Physics, Kansas State University, P.Q. WANG, Department of Physics, Western Illinois University — The dissociative ionization of  $N_2^+$  and  $O_2^+$  molecular ion beams has been studied using laser pulses of 790 nm, 10-45 fs and up to  $2 \times 10^{15}$  W/cm<sup>2</sup>. The momentum distributions of the dissociation channels  $N^+ + N^+$  and  $O^+ + O^+$  are measured by a three-dimensional momentum imaging method. The angular distributions of the ionization of these two molecules exhibit significant differences, which will be compared to theoretical predictions. The angular distribution of the ionization of  $O_2^+$  is found to strongly depend on the kinetic energy release. The branching ratios and the intensity dependence of the ionization channels will also be discussed.

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