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Resonant Ion-Pair Formation of HD^+ , NO^+ and H_3^+ _____•ANITA NEAU¹, WEI ZONG¹, ASA LARSON¹, NADA DJURIC², ARNAUD LE PADELLEC³, AHNIED AL-KHALILI¹, HAKAN DANARED⁴, ALIK M. DERKATCH¹, CHRIS H. GREENE², ANN E. ORELS, DUSKA POPOVIC², STEFAN ROSEN¹, JACEK SEMANIAK⁶, WEI SHI¹, RICHARD THOMAS¹, LJILJANA VIKOR¹, MAGNUS AF UGGLAS⁴, MATS LARSSON¹, and GORDON H. DUNN²__¹Department of Physics, Stockholm University, Box 6730, S-113 85 Stockholm, Sweden__²JILA and Department of Physics, University of Colorado and NIST. Boulder, Colorado 80309-0440__³LCAR UMR 5589 Université Paul Sabatier-Toulouse III, 31062 Toulouse Cedex, France__⁴Manne Siegbahn Laboratory, S-104 05 Stockholm, Sweden__⁵Department of Applied Science, University of California, Davis, Livermore, California 94550__⁶Institute of Physics, Pedagogical University, 25-406 Kielce, Poland

The capture of an electron by a molecular ion can be stabilized by fast dissociation. If the produced fragments are a pair of positive and negative fragments, this process is called resonant ion pair formation. Here we present experimental studies of this process for HD^+ , NO^+ and H_3^+ . The experiments were performed at the ion storage ring CRYRING, MSL, Stockholm, by detecting negative fragments arising from the dissociations. For HD^+ , 14 peaks were observed in the measured cross sections. For NO^+ , results were compared with photoionization data. Results for H_3^+ were still in progress at the time this abstract was written.