Abstract Submitted
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Experimental Determination of Electron-impact Rotational Excitation Rate Coefficients for CH^+[1] ABEL KALOSI, MPIK, Heidelberg, Germany; Columbia University, NY, NY, USA, K. BLAUM, MPIK, Heidelberg, Germany, S. GEORGE, MPIK, Heidelberg, Germany, Universitaet Greifswald, Germany, J. GOECK, M. GRIESER, F. GRUSSIE, R. VON HAHN, N. JAIN, C. KRANTZ, H. KRECKEL, C. MEYER, D. MUELL, O. NOVOTNY, F. NUESSLEIN, D. PAUL, S. SAURABH, MPIK, Heidelberg, Germany, D. W. SAVIN, Columbia University, NY, NY, USA, V. C. SCHMIDT, P. WILHELM, A. WOLF, MPIK, Heidelberg, Germany — CH^+ has been detected in space and laboratory plasmas. Interpretation of the observed spectrum relies, in part, on radiative transfer models built on a knowledge of the relevant excitation and de-excitation processes, such as inelastic collisions with electrons. Here we present merged beams experiments of CH^+ with the recently implemented electron cooler at the Cryogenic Storage Ring (CSR) in Heidelberg. This experimental setup facilitates low (meV) collision energy measurements to study inelastic electron-ion collisions. We combined the collision measurements with near-threshold photodissociation to probe the populations of the lowest rotational states of the stored CH^+. Using a velocity-matched or slightly detuned electron beam, we can, for the first time, experimentally determine electron-impact rotational excitation and de-excitation merged beams rate coefficients for a molecular ion. Here we will present our first results.

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Abel Kalosi
MPIK, Heidelberg, Germany; Columbia University, NY, NY, USA

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