The Astrophysical Journal, 795:176 (1pp), 2014 November 10 doi:10.1088/0004-637X/795/2/176

ERRATUM: "DISSOCIATIVE RECOMBINATION MEASUREMENTS OF HCl^+ USING AN ION STORAGE RING" (2013, ApJ, 777, 54)

O. Novotný[1], A. Becker[2], H. Buhr[2], C. Domesle[2], W. Geppert[3], M. Grieser[2], C. Krantz[2], H. Kreckel[2], R. Repnow[2], D. Schwalm[2,4], K. Spruck[5], J. Stützel[1], B. Yang[2,6], A. Wolf[2], and D. W. Savin[1]
[1] Columbia Astrophysics Laboratory, Columbia University, New York, NY 10027, USA; oldrich.novotny@mpi-hd.mpg.de
[2] Max Planck Institute for Nuclear Physics, D-69117 Heidelberg, Germany
[3] Department of Physics, Stockholm University, AlbaNova, SE-10691 Stockholm, Sweden
[4] Department of Particle Physics and Astrophysics, Weizmann Institute of Science, Rehovot 76100, Israel
[5] Institut für Atom- und Molekülphysik, Justus-Liebig-Universität Giessen, D-35392 Giessen, Germany
[6] Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou 730000, China
Received 2014 October 1; published 2014 October 28

In Table 3 the fit parameters for the plasma rate coefficient $\alpha_{\rm pl}$ using Equation (11) are correct, but the assigned parameter uncertainties given are erroneous and should be ignored.

As explained in the paper, the plasma rate coefficient has two important systematic error components: the absolute scaling error and the error due to the uncertainties in the electron beam energy spreads $k_{\rm B}T_{\perp}$ and $k_{\rm B}T_{||}$. These error components have very different dependencies on the plasma temperature T. To correctly propagate these errors in astrochemical models, each of the error components needs to be treated independently.

The absolute scaling error of the merged beams rate coefficient $\alpha_{\rm mb}$ propagates directly to $\alpha_{\rm pl}$ as a 12% relative error, which describes a single scaling of the complete $\alpha_{\rm pl}(T)$ curve. The uncertainties of the electron beam temperatures $k_{\rm B}T_{\perp}$ and $k_{\rm B}T_{||}$ propagate to $\alpha_{\rm pl}$ as an absolute error. For plasma temperatures of 10–100 K, this can be well approximated by $\pm 2.3 \times 10^{-6}\,(T/{\rm K})^{-1.0}$ cm^3 s^{-1}, while for 100–5000 K this error is approximately $\pm 8.5 \times 10^{-6}\,(T/{\rm K})^{-1.3}$ cm^3 s^{-1}.