Verhandlungen Φ
der Deutschen Physikalischen Gesellschaft e.V.

Erlangen 2018 – wissenschaftliches Programm

Bereiche | **Tage** | **Auswahl** | **Suche** | **Aktualisierungen** | **Downloads** | **Hilfe**

A: Fachverband Atomphysik

A 25: Poster Session I

A 25.2: Poster

Dienstag, 6. März 2018, 16:15–18:15, Redoutensaal

Auswahlstatus für diesen Beitrag: gemäß den Sitzungseinstellungen

Near L-edge single and multiple photoionization of singly charged iron ions — •Stefan Schippers[1], Michael Martins[2], Randolf Beerwerth[3], Sadia Bari[4], Kristof Holste[1], Kaja Schubert[4], Jens Viefhaus[4,5], Daniel Wolf Savin[6], Stephan Fritzsche[3], and Alfred Müller[1] — [1]Univ. Gießen — [2]Univ. Hamburg — [3]Univ. Jena and HI Jena — [4]DESY — [5]HZB — [6]Columbia Astrophysics Laboratory, New York, USA

Absolute cross sections for *m*-fold photoionization (*m*=1,…,6) of Fe^+ by a single photon were measured employing the photon-ion merged-beams setup PIPE at the PETRA III synchrotron light source, operated by DESY in Hamburg, Germany. Photon energies were in the range 680–920 eV which covers the photoionization resonances associated with 2*p* and 2*s* excitation to higher atomic shells as well as the thresholds for 2*p* and 2*s* ionization. Supporting semi-relativistic and fully relativistic atomic-structure calculations are in good agreement with each other and with the experimental results. In particular, the complex deexcitation cascades after the creation of inner-shell holes in the Fe^+ ion have been tracked on the atomic fine-structure level. The resulting theoretical product charge-state distributions are in much better agreement with the experimental data than previously published charge-state distributions from a configuration-average approach. The present experimental and theoretical results [1] are valuable for opacity calculations and are expected to pave the way to a more accurate determination of the iron abundance in the interstellar medium.

[1] S. Schippers et al., Astrophys. J. 849 (2017) 5.