

Abstract Submitted  
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**Measurements of Lifetimes and f-Values In Highly-Charged Ions**

STEVEN SMITH, ARA CHUTJIAN, SABBIR HOSSAIN, Jet Propulsion Laboratory — Measurements have been made of lifetimes of metastable levels of highly-charged ions (HCI). These contribute to the optical absorption, emission and energy balance in the ISM, stellar and solar atmospheres, etc. The experimental lifetime measurements are carried out using the 14.0 GHz electron cyclotron ion source at the JPL facility.[1] Ions are injected into a Kingdon ion trap and stored for times longer than the metastable lifetimes. Decay channels include inter-combination, E2, M1 and 2E transitions. The UV photons are filtered by an interference filter and detected by a UV grade photomultiplier tube using a UV grade optical system. The Kingdon trap was constructed in collaboration with Texas A and M University [2]. We previously have reported lifetimes for transitions of  $C^+$  [1] and  $O^{2+}$  [4]. Additional metastable lifetimes have been measured for  $M^{6+}$ ,  $Fe^{9+}$ ,  $Fe^{10+}$  and  $Fe^{13+}$  metastable states [5]. New results for  $Fe^{11+}$  will be presented. Sabbir Hossain acknowledges support through NASA-NRC program. This work was carried out at the Jet Propulsion Laboratory/Caltech and was supported by the NASA [1] Steven J. Smith, A. Chutjian, J.B. Greenwood, *Phys. Rev. A* **60**, 3569 (1999). [2] L. Yang and D.A. Church, *Phys. Rev. Lett.* **70**, 3860 (1993). [3] S.J. Smith, I. Cadez, A. Chutjian, and M. Niimura, *Ap. J.* **602**, 1075 (2004). [5] S.J. Smith, A. Chutjian, J. Lozano, *Phys Rev. A* **72**, 062504 (2005).

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