The Role Of Atomic Data In X-Ray Astrophysics

Ehud Behar[a]

[a]*Department of Physics, Technion, Haifa 32000, Israel*

Abstract. Atomic spectroscopy has been one of the main achievements of the X-ray astrophysical missions of the 21st century, e.g., *Chandra* and *XMM-Newton*. Consequently, the knowledge of atomic data has played a major role in determining our ability to carry out high precision measurements using X-ray astrophysical observations. A special challenge to observers and to modelers has been ionized Fe, whose emission and absorption spectra have been investigated only to a small degree until about a decade ago. I will review the progress in the availability of Fe atomic data and indicate the few places where I believe we are still lacking. In particular, I will stress the importance of inner-shell absorption spectroscopy, e.g. [1] with an emphasis on Fe K-shell transitions that will be nicely resolved for the first time with the micro-calorimeter on board the *Astro-H* mission (to be launched in 2014). I will also describe the difficulties to model Fe L-shell emission from photo-ionized plasmas in active galactic nuclei that have been ongoing since the first measurements of such spectra [2].

Keywords: X-Ray Astrophysics, Spectroscopy, Photoionized Plasma

ACKNOWLEDGMENTS

This work is supported by a grant from the Israeli Science Foundation (ISF)

REFERENCES

1. E. Behar, M. Sako, and S. M. Kahn, *The Astrophysical Journal* 2001, **563**, pp. 497.
2. A. Kinkhabwala et al. *The Astrophysical Journal* 2002, **575**, pp. 732.