

Cometary X-rays from Plasma Processes

S.J. Wolk¹, C.M. Lisse², K. Dennerl³, , D. Bodewits⁴, D. J. Christian⁵

¹ *Harvard-Smithsonian Center for Astrophysics, Cambridge, MA*

² *Johns Hopkins University Applied Physics Laboratory, Laurel, MD, 20723, USA*

³ *MPE, Giessenbachstrasse, 85748 Garching, Germany*

⁴ *NASA Goddard Space Flight Center, Greenbelt, MD, USA*

⁵ *California State University, Northridge, CA, USA*

The discovery of high energy x-ray emission in 1996 from comet C/1996 B2 (Hyakutake) created a new class of solar system x-ray emitting objects [1]. Subsequent detections of the morphology, spectra, and time dependence of the x-rays from more than 20 comets have shown that the very soft ($E < 1$ keV) emission is due to a charge-exchange interaction between highly charged solar wind minor ions and the comet's extended neutral atmosphere [2,3]. We present a summary of recent planetary and cometary observations by the Chandra, CHIPS, EUVE, ROSAT, Swift, and XMM spacecraft, in conjunction with solar wind measurements made by the ACE, IMP-8, SOHO, and TRACE spacecraft, in order to demonstrate the richness and utility of solar system X-ray emission

References

- [1] C.M. Lisse *et al.* *Science* **274**, 205 (1996)
- [2] R. Wegmann and K. Dennerl *A&A* **430**, L33 (2005)
- [3] D. Bodewits *et al.* *A&A* **469**, 1183 (2007)