Abstract Submitted
for the APR14 Meeting of
The American Physical Society

**Probing the Hot and Energetic Universe – X-rays and Astrophysics** JAY BOOKBINDER, Smithsonian Astrophysical Observatory — X-ray observations are a cornerstone of our understanding of the formation and evolution of structure in the Universe, from solar-system-sized supermassive black holes (SMBH) to the largest clusters. At the most basic level, a significant fraction of the energy output in the Universe is in X-rays, with half or more of the baryons today in a hot (>1 MK) X-ray-emitting phase. The recent European Space Agency selection of the Hot & Energetic Universe theme for their next large space astrophysics mission will address questions such as how ordinary matter assembles into the large-scale structures that we see today, and how black holes evolve and influence the Universe. We know, for example, that building a SMBH releases 30× the binding energy of a galaxy, but do not understand the feedback mechanism that creates a tight relationship between galaxy bulge properties and the central SMBH. These questions will be addressed by an ESA mission, likely with US contributions, that is scheduled for launch in 2028. New technology for future X-ray imaging, spectroscopy, and polarimetry missions under development in the US will also be briefly discussed.

Jay Bookbinder
Smithsonian Astrophysical Observatory

Date submitted: 10 Jan 2014 Electronic form version 1.4