

Abstract Submitted  
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**Probing cosmic baryons with X-ray spectroscopy of GRB afterglows** DIETER HARTMANN, Clemson University, CHRYSSA KOUVELIOTOU, NASA/MSFC, JAN-WILLEM DEN HERDER, SRON, LUIGI PIRO, INAF-Rome, DAVID BURROWS, Penn State University, TAKAYA OHASHI, Tokyo Metropolitan University — Gamma-Ray Bursts (GRBs) provide a unique probe of the cosmic history of baryons from the first stars to the present epoch. Reconstructing the cosmic history of metals is a key observational challenge, which we plan to address with high resolution X-ray measurement. We also characterize the chemical composition of gas in clusters of galaxies and the Warm-Hot Intragalactic Medium (WHIM). Cluster measurements will take advantage of wide field of view telescopes. These goals can be fulfilled with a medium-size mission, proposed to ESA and NASA by an international consortium. The latest incarnation proposed to ESA is ORIGIN, which evolved from the EDGE and Xenia mission profiles and builds upon those previous concepts. The mission utilizes fast and autonomous satellite re-pointing following the detection of a GRB (this requires a sensitive hard X-ray detector with a large field of view) and a wide-field imaging spectrometer in the soft X-ray band. This measures the emission and absorption lines in hot and cold gas, providing diagnostics of temperature, ionization state, dynamics and abundances in clusters beyond their vir

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