FINAL SCIENTIFIC REPORT FOR XMM-NEWTON GRANT

REPORT TYPE – Final Summary of Research
PRINCIPAL INVESTIGATOR – Dr. Niel Brandt
GRANT NUMBER - NAG5-9939
GRANT TITLE - An XMM-Newton Study of the Bright Narrow-Line Seyfert 1 Galaxy Arakelian 564
TIME PERIOD – 9/15/00-9/14/04
RECIPIENT'S INSTITUTION – The Pennsylvania State University
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XMM-Newton acquired data on the accepted target, Ark 564, on 2000 June 17 and 2001 June 9. The data have been analyzed and interpreted in detail, and the derived results are reported in the published paper:

"Arakelian 564: An XMM-Newton view", Vignali C., Brandt W.N., Boller Th., Fabian A.C., Vaughan S., 2004, Monthly Notices of the Royal Astronomical Society, 347, 854-860

The abstract of this paper concisely summarizes our primary findings:

We report on two XMM-Newton observations of the bright Narrow-Line Seyfert 1 galaxy Ark 564 taken one year apart (2000 June and 2001 June). The 0.6-10 keV continuum is well described by a soft blackbody component (kT ~ 140-150 eV) plus a steep power law (Gamma ~ 2.50-2.55). No significant spectral changes are observed between the two observations, although the X-ray flux in the second observation is ~ 40-50 per cent lower. In both observations we detect a significant absorption edge at a rest-frame energy of ~ 0.73 keV, corresponding to O VII. The presence of the absorption feature is confirmed by a simultaneous Chandra grating observation in 2000 June, although the best-fitting edge threshold is at a slightly lower energy in the Chandra data, possibly because of a different parameterization of the underlying X-ray continuum. We find tentative evidence for a broad iron emission line in the 2000 June observation. The results from an analysis of the power spectral density (PSD) function are also presented. The present XMM-Newton data support the idea that the PSD shows two breaks, although the location of the high-frequency break requires further constraints.

The relevant XMM-Newton grant is acknowledged in the paper above, and the paper is publicly available at:
http://arxiv.org/abs/astro-ph/0310278

There are no inventions or patents to report for this grant.

Thank you for supporting this XMM-Newton project. Please let me know if you have any questions or feedback.