ACTIVE GALACTIC NUCLEI, QUASARS, BL LAC OBJECTS AND X-RAY BACKGROUND

NASA Grant No: NNG04GG97G

Annual Report

For Period 1 April 2004 through 31 March 2005

Principal Investigator
Martin Elvis

January 2005

Prepared for:

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, MD 20771

Smithsonian Institution
Astrophysical Observatory
Cambridge, Massachusetts 02138

The Smithsonian Astrophysical Observatory
is a member of the
Harvard-Smithsonian Center for Astrophysics

The NASA Technical Officer for this Grant is Richard Mushotzky, Code 662, Goddard Space Flight Center; Greenbelt, MD 20771

The XMM COSMOS survey is producing the large surface density of X-ray sources anticipated. The first batch of ~200 sources is being studied in relation to the large scale structure derived from deep optical/near-IR imaging from Subaru and CFHT. The photometric redshifts from the opt/IR imaging program allow a first look at structure vs. redshift, identifying high z clusters.

A consortium of SAO, U. Arizona and the Carnegie Institute of Washington (Pasadena) has started a large program using the 6.5meter Magellan telescopes in Chile with the prime objective of identifying the XMM X-ray sources in the COSMOS field. The first series of observing runs using the new IMACS multi-slit spectrograph on Magellan will take place in January and February of 2005. Some 300 spectra per field will be taken, including 70%-80% of the XMM sources in each field. The four first fields cover the center of the COSMOS field. A VLT consortium is set to obtain bulk redshifts of the field galaxies. The added accuracy of the spectroscopic redshifts over the photo-z's will allow much lower density structures to be seen, voids and filaments. The association of X-ray selected AGNs, and quasars with these filaments, is a major motivation for our studies. Comparison to the deep VLA radio data now becoming available is about to begin.