Location of the Nonthermal Optical Emission from Jets in AGN

D. L. Jones, A. E. Wehrle, S. C. Unwin, D. L. Meier (JPL, Caltech),
and B. G. Piner (Whittier College and JPL, Caltech)

ABSTRACT

As part of an approved key science project for the Space Interferometry Mission, we plan to measure the position offsets between red and blue optical emission from a sample of active galactic nuclei. By using differential measurements of the fringe phase between different color bands, we expect to be able to detect color-dependent astrometric offsets of several micro-arcseconds. The blue optical continuum is expected to be dominated by thermal emission from the inner accretion disk (the source of the Big Blue Bump) in many quasar spectra. The red optical continuum is expected to be dominated by power-law nonthermal emission from the relativistic jet or from a hot corona surrounding the inner accretion disk. Our measurements of position offsets between blue and red light will allow us to determine the location of nonthermal optical emission with respect to the thermal emission from the inner accretion disk. We will also be able to monitor the astrometric stability of the optical emission centroids. This research was carried out at the Jet Propulsion Laboratory, California Institute of Technology, under contract with the U.S. National Aeronautics and Space Administration.