

Title:

Tracking the Moving Optical Photocenters of Active Galaxies: Binary Black Holes, Accretion Disks, and Relativistic Jets

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Abstract:

We will use the astrometric capabilities of the Space Interferometry Mission to answer three key questions about active galactic nuclei: 1) Does the separation of the radio core and optical photocenter of quasars change on the same timescale as their photometric variability, or is the separation stable? 2) Does the most compact optical emission from an active galactic nucleus come from an accretion disk or from a relativistic jet? 3) Do the cores of galaxies harbor binary supermassive black holes remaining from galaxy mergers? We will compare the radio and optical positions of quasars used in the tie between optical and radio celestial reference frames. During the first year after launch, we will be able to show whether the frame tie will be limited by "astrophysical noise".

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Ann Wehrle is the Principal Investigator for the NASA Space Interferometry Mission Key Project on Active Galactic Nuclei. She leads the SIM Science Planning Team at JPL. Since 2000, she has been a member of the Interferometry Science Center at Caltech. Her research centers on the structure of relativistic jets at the centers of active galaxies and quasars. She received a PhD in astronomy in 1987 from UCLA.

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