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Subject: AAS abstract

Title:

Space Interferometry Mission

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Abstract:

The Space Interferometry Mission (SIM) will be a 10-m baseline optical interferometer in earth orbit. SIM is primarily an astrometric mission, providing high-throughput astrometry with an estimated noise floor for bright stars of about 4 μ as over wide angles, and 1 μ as over small fields. This level of accuracy will allow accurate parallaxes and distances for a very large number of stars of different types throughout the Galaxy. SIM will address many areas of Galactic astronomy, including dynamics of stars in globular and open clusters, the Galactic halo, and spiral structure. Rotational synthesis imaging with a resolution in the optical of 10 mas will enable detailed study of stellar debris disks, young stellar objects, and AGN.

SIM will perform a large survey of nearby stars for planetary systems, by detecting the astrometric wobble of the parent star. A Jupiter-mass planet signature will be measurable to 10 % at a distance of 150 pc, and a Uranus-mass planet in a 1-AU orbit will be detectable to ~40 pc. Radial velocity programs are most sensitive to planets in orbits < 1 AU, and are therefore complementary to SIM's survey for companions (including brown dwarfs) in wider orbits.