An Optical Interferometer on the Moon: Concept and Astrometric Science

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Abstract

Optical interferometry from the surface of the moon has been considered over the past decades as an alternative to orbital facilities. The lunar surface could potentially provide a simple, stable alternative to elaborate spacecraft concepts employing either formation flying or deployments of large structural elements. The potential for interferometry from the lunar surface is being examined anew, with the advent of numerous surface access opportunities in the Artemis era, via both robotic and crewed missions. In particular, both narrow- and wide-angle astrometric observations at the sub-microarcsecond level can be enabled with static, hundred-meter class baselines that are significantly simpler than a corresponding orbital facility. The architecture of such a lunar facility, and prospects for it in the context of existing transportation frameworks and mission funding lines, will be presented.

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