Stellar astrophysics and optical interferometry in the 2040s

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Abstract

The relatively high surface brightness of stars historically made them natural targets for large optical arrays, and over the last few decades, optical interferometry has brought major contributions in stellar astrophysics. The extraordinary diversity of the physics governing the structure, evolution and environment of stars offers rich perspectives to improve our understanding of various fundamental physical phenomena. Energy and angular momentum transport, gravitation in the strong and weak regimes, matter accretion and mass loss, magnetism, interactions in binary and multiple systems, star-planet interactions and time-dependence of habitability, novae and supernovae... are only a few examples of astrophysical topics that will leverage optical interferometry at ultra-high angular resolution. In many cases, high spectral resolution spectroscopy and polarimetry offer essential benefits. In this brief and necessarily incomplete presentation, I will attempt to provide food for thoughts on potential future contributions of optical interferometry in stellar astrophysics.

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