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COLLOQUIUM

Thursday, Oct. 23, 2025

4pm Workman 101

Speaker: Dr. Jaren Ashcraft

Affiliation: NASA Hubble Fellow at UC Santa Barbara

Polarization in Astronomical Telescopes: Efforts in controlling polarization in NASA's Habitable Worlds Observatory. (Optical engineering career pathways)

NASA’s Habitable Worlds Observatory (HWO) aims to achieve contrasts of one part in 10 billion to detect and characterize exo-Earths. This ambitious goal requires an instrument so sensitive that we must contend with error terms that have not limited previous high-contrast instrumentation. Polarization is one such source of error that is particularly problematic for coronagraphy onboard a large space telescope. In large, compact, astronomical observatories the change in angle of incidence along the optical path can be quite large. Changes in angle of incidence across a beam result in chromatic polarization-dependent phase and amplitude aberrations. These aberrations tend to decrease sensitivity to faint signals at small angular separations, which may limit the total number of exo-Earths HWO is able to detect. We review efforts in modeling, analyzing, and measuring the polarization of light in astronomical telescopes to better understand polarization aberrations in HWO, and showcase the open-source software packages we have built to support future investigations.

Zoom Link: (https://nmt-edu.zoom.us/j/97572348560?pwd=OLHjHRLKVCeL1LnUsxGTFMLrDJagQv.1)

Meeting Id: 975 7234 8560; Passcode: 677943