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Modeling Polarimetric Variability from Thomson Scattering in Colliding Wind Binaries

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Massive star binaries are important for measuring stellar masses and stellar wind mass-loss rates. One obstacle is inferring viewing inclination and extracting information about the colliding wind interaction (CWI) region. Polarimetric variability from electron scattering in the winds and CWIs of massive stars provides information about system inclination and the geometry of the colliding wind bow shock. Using the semi-analytic solution for bow shock properties from Canto et al (1996), we calculate the polarimetric properties of CWI systems. We conduct a parameter study to explore scenarios involving nearly equal winds (e.g., O+O), strongly unequal winds (e.g., WR+OB), and wavelength-dependent effects (UV, optical, and IR).

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