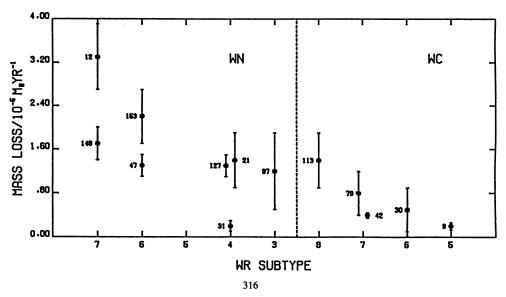# PHOTOMETRIC DETERMINATION OF MASS LOSS RATES AND ORBITAL INCLINATIONS FOR WR BINARIES

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ABSTRACT Most Wolf-Rayet binaries show phase-dependent light variations with a broad dip occurring at phase zero, when the WR star passes closest to the observer. When the orbital period is long, or the inclination is low, this dip is buried in the noise. When eclipses of the stars occur, another dip is seen when the companion passes closest to the observer; in this case, both dips are relatively deep and sharp (e.g. V444 Cygni, HD5980).
In the cases when only one dip at phase zero is seen, a simple model is derived. This involves electron scattering of companion starlight as the orbit makes it systematically traverse different amounts of the WR wind, assumed to be spherically symmetric and to follow a monotonic velocity-radius law. The shape and amplitude of the dip yield estimates of $\dot{M}$ and i (hence M when combined with $M \sin^3 i$ from spectroscopic orbits).

Mass-Loss rates as a function of WR subtypes. Stars are identified by their WR No. (CV Ser = WR113, GP Cep = WR153).