

SOME EMISSION LINES IN WCE STARS HAVE NEARLY CONSTANT LINE STRENGTHS

KENNETH R. BROWNSBERGER and PETER S. CONTI
Joint Institute for Laboratory Astrophysics
University of Colorado, Boulder, CO 80309-0440, USA

We present empirical measurements of line strengths (Equivalent Widths-EW) of WCE stars (WC4-WC7). Our database presently includes approximately 50 emission lines stretching from the UV to the NIR. We have data for approximately 40 stars, but the spectral range is not complete for each star. At present, there are approximately 10-20 EW measurements for each line in the database. The lines used in the classification of the WC subtypes, along with a few others, show a dramatic dispersion in strength (as expected) within the WCE subtypes. Many other lines of carbon and oxygen ions indicate only a moderate range among the subtypes. We have found that there are several lines that show almost no dispersion in strength from WC4-WC7. These nearly constant lines can be used to give empirical estimates of the brightness ratio of the W-R to companion star in WCE + OB systems, and can also be used to estimate interstellar reddening. The similarity of line strengths among several C III and C IV emission features in WCE stars suggests that the ionization level in the wind is not fundamentally different among WC4-WC7 subtypes. Another parameter (e.g. C/He?) may have a substantial influence on those lines used for the WCE classification.

Since we have not yet reduced the spectroscopic data for WCL stars, we are uncertain as to whether these same lines are nearly constant in strength for them. We can assert that there are no lines in WN types that have nearly constant line strengths.