

SPECTRAL ANALYSES OF WC-TYPE CENTRAL STARS

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Models have been developed in Kiel for massive (Pop. I) WR stars which account for multi-level non-LTE radiation transfer in spherically expanding atmospheres. The published (Koesterke et al. 1992) grid of models for WC composition (40% helium, 60% carbon by mass) can be applied to low-mass stars as well by means of the scaling properties of WR spectra (Hamann et al. 1992) and allow a rough guess of the parameters, while individual calculations are necessary for a detailed analysis and the determination of the chemical composition.

We have analyzed the spectrum of the central star of NGC 6751. The obtained parameters - still somewhat preliminary - are given in the Table and compared to the previously analyzed CPN of Abell 78 (Werner & Koesterke 1992) and Longmore 4 (cf. Werner et al., these proceedings). The luminosity has been adopted as $10^{3.7} L_{\odot}$ from evolutionary considerations for all three stars. The results reveal that the only essential difference between these three CPN concerns their mass-loss rate, which is exceptionally strong in NGC 6751. The Longmore 4 data refer to the state of high mass-loss observed fortuitously on Jan-27-1992, while in the quiet state Longmore 4 is of PG 1159 type with \dot{M} being $10^{-8} M_{\odot} \text{ yr}^{-1}$ or less. Despite of their mass-loss all three stars resemble PG 1159 stars, indicating a close relationship.

The remarkable existence of nitrogen in NGC 6751 and Abell 78 has also its counterpart in a PG 1159 star (namely PG 1144+005, cf. Werner & Heber 1991); its explanation within the “born-again” scenario needs special assumptions on “mixing and burning” (cf. Schönberner & Böcker 1992).

CPN	NGC 6751	Abell 78	Longmore 4
T_{*} / kK	105	115	120
$\log \dot{M} / (M_{\odot} \text{ yr}^{-1})$	-5.2	-7.3	-7.3
$v_{\infty} / (\text{km s}^{-1})$	2000	3700	4000
helium [% by mass]	61.5	33	67
carbon [% by mass]	27	50	25
nitrogen [% by mass]	1.5	2	0
oxygen [% by mass]	10	15	8

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