Wolf-Rayet Phenomena in Massive Stars and Starburst Galaxies
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The continuum energy distribution of single galactic Wolf-Rayet stars

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Abstract. For eleven single galactic WR stars, the continuum energy distribution from the UV to the radio was obtained from literature data. Although a power law with $\alpha = 2.79$ could describe all the distributions, there appear to be deviations that depend on stellar type.

1. Introduction

The spectral energy distribution remains an important diagnostic of the structure of optically thick stellar winds. For radio and IR, the approximation to the theoretical power law distribution for a non-accelerating wind (Barlow & Wright 1975) is well established except for non-thermal effects. The UV and optical also show a power law $F_\lambda \propto \lambda^{-\alpha}$ with $\alpha \simeq 2.8$. Morris *et al.* (1993) used this to establish accurate color excesses of single galactic, LMC and SMC stars by 'nulling' the 2200 Å absorption dip. In this study, results from different studies are combined to obtain the energy distribution over as large a baseline as possible.

2. Data

UV and optical continuum data were graciously provided by P.W. Morris and K.R. Brownsberger. Radio data were taken from the literature. Infrared data were taken from the Catalog of Infrared Observations by Gezari *et al.* (1997).

3. Results

The approach of Morris *et al.* was replicated with an extended baseline. Power-law behaviour remained the obvious description. Although extending the baseline resulted in fewer stars with data all over the baseline, the α parameters kept the approximately Gaussian distribution and insensitivity to stellar type found in that study. However, the spectral index often changed markedly as the baseline extended past 6 micron. At the full baseline, 1500 Å to 20 cm, eleven stars were left, with a mean $\alpha = 2.79$ ($\sigma = 0.05$).

A better fit is obtained when α is allowed to change somewhere in the infrared (6 micron was adopted). Due to this additional free parameter, the spectral index for $\lambda > 6$ micron is seen to increase by a few tenths for early type stars,

and decrease for late type stars. This behaviour is shown by both WC and WN stars. Details will be given in a forthcoming paper.

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