

HIGH-DISPERSION SPECTROSCOPY OF THE BRIGHTEST EMISSION-LINE STARS OF THE MAGELLANIC CLOUDS

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We present an atlas of high dispersion spectra of 24 of the brightest peculiar emission-line stars of the Magellanic Clouds.

Our spectra cover the wavelength range from 3600 to 4900 Å. They have been obtained from 1970 to 1984 with the coudé spectrograph of the ESO 1.52 m telescope at La Silla, Chile. The spectral resolution is 0.4 Å for most of the spectra and 0.2 Å for the very brightest stars. Up to 11 spectra are available for one star. In addition, we have done UBVR_IJHK(LM) photometry at several epochs of all stars of our sample.

The largest group in our sample are the stars which we shall call 'classical P Cyg stars'. They are characterized by classical Beals type I P Cyg profiles at H_β and sometimes also at higher Balmer lines. In addition, they show a photospheric spectrum of a B type supergiant. Stars with such properties are R 55, R 62, R 74, R 81, R 85, R 110, R 116 and R 40.

Another group of stars which includes R 84, R 99, S 9 and S 131 are the 'Of-like' objects. They have the Of-features He II 4686 and N III 4634-42 in emission but contrary to normal Of stars they exhibit also strong Balmer emission lines. The photospheric spectrum of an O star is weakly present. We consider the Of-like objects as the hotter counterparts of the P Cyg stars.

The S Dor variables S Dor, R 71 and R 127 are the most extreme variables of the P Cyg- and Of-like stars. Most of the other P Cyg stars and of the Of-like stars are also known to be variable but with smaller amplitude than the S Dor variables.

A group of stars which seems to be fairly homogeneous and well-separated are the B[e] stars with dust shells. R 4, R 50, R 66, R 82, R 126, S 12, S 22 and S 134 belong to this group. In addition to a large IR excess, which is explained by thermal emission from dust with a temperature

around 1000 K, they all have Fe II and mostly also [Fe II] emission lines. The photospheric absorption lines are weak or absent in all stars of this group. The stars with dust shells tend to show only small variations, both photometrically and spectroscopically. All this suggests that the supergiant B[e] stars with dust shells form a group of stars that is quite different from the P Cyg and Of-like stars.

A more detailed paper will appear in the Supplement Series of Astronomy and Astrophysics.

MWC 300: A RUNAWAY HYPERGIANT

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We analysed highly resolved CASPEC spectra with a high S/N-ratio of the peculiar emission-line B-star MWC 300, which is surrounded by a circumstellar dust shell. These high quality spectra enabled us to study the photospheric spectrum of MWC 300. By comparing the absorption spectrum of MWC 300 with the ones of early B supergiants we found a close resemblance with the B1 hypergiant HD 169454. We also found luminosity sensitive fluorescence lines of Fe III 115 and 117 both in MWC 300 and in the most luminous stars of our sample, confirming the hypergiant nature of MWC 300. We estimated an absolute visual magnitude $M_V = -8$ for MWC 300. Assuming a bolometric correction of B.C. = -1.5 mag we derive $M_{bol} = -9.5$. This shows that MWC 300 is very similar to the B e supergiants of the Magellanic Clouds. From its absolute magnitude we derive a distance of $z = 560$ pc from the galactic plane. It is conjectured that MWC 300 is a runaway hypergiant, released via a supernova explosion in a very massive binary star system.