A COMPARATIVE STUDY OF THE THREE K-TYPE MEMBERS OF THE SYSTEMS ZETA AURIGAE, 31 CYGNI AND 32 CYGNI

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Abstract. (*)

The spectra of the K-type components of Zeta Aurigae, 31 Cygni and 32 Cygni have been observed during the last eclipses with the same equipment. Their spectrograms are therefore very well suitable for a comparison of the three K-type stars. The color temperature of Zeta Aurigae, derived by the slope of the relation $m_K - m_B$ versus $1/\lambda$ is appreciably lower than for the two other stars. This fact is attributed to the larger width of the absorption lines of Zeta Aurigae which causes a larger masking of the continuum.

32 Cygni has higher microturbulence velocity and lower damping, Zeta Aurigae has the opposite characteristics and 31 Cygni is in between.

Since Zeta Aurigae has the lowest microturbulence, we think that the larger width of the lines in its spectrum, is imputable to rotation rather than to macroturbulence.

DISCUSSION

WRIGHT. On Victoria high dispersion spectrograms the line widths in these three stars are not greatly different, though it is possible that those in Zeta Aurigae may be slightly broader. However the turbulence in the K stars is not more than 6-7 km/sec, probably less and some of the broadening may be due to the instrumental profile. There may, of course, be changes from time to time as a result of «prominence» motions in these atmospheres.

HACK. The effect is real because all the spectrograms of these three stars have been taken with the same identical equipment, same slit and the tracings were also obtained with the same microphotometer in the same identical conditions. Moreover the microturbulence of Zeta Aurigae is definitely lower than for the other two stars.

PAGEL. I am somewhat puzzled by the difference in damping constant shown by Zeta Aurigae compared with the other two stars.

HACK. This could partly be due to the blending, which is larger in Zeta Aurigae, due to the larger widths of the lines. The difference in microturbulence, on the contrary is real, and probably larger, the larger blending acting in the opposite direction, i.e. having the effect to give a spurious larger microturbulence.

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