# CNO EXCESS IN 47*TUCANAE* FROM THE INTEGRATED SPECTRUM SYNTHESIS

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We have found evidence of a CNO/Fe excess in the integrated spectrum of 47 Tuc relative to a synthetic cluster built up of solar neighbourhood stellar spectra from Gunn & Stryker's library (GS, 1983). The 47 Tuc spectrum was synthesized between $3200 < \lambda < 9750$Å aided by the cluster color-magnitude diagram (Hesser et al. 1987) complemented with a low main sequence, which was simulated by a canonical initial mass function (IMF) of slope $x = 2.8$. If a flat IMF (Hesser et al. 1987) is attributed to stars earlier than M, then $x \approx 5$ is necessary for lower masses. A similar synthesis procedure was previously applied to the Galactic open cluster M11 (Santos Jr. et al. 1990). The residuals from the spectral synthesis were analyzed between $3200 < \lambda < 5400$Å, where a blanketing *stronger* in 47 Tuc than in the solar model remained. This is the integrated version of blue/violet excesses found in 47 Tuc individual giants (Hesser et al. 1977). It is well known that 47 Tuc has lower [Fe/H] than the solar model, suggesting non-solar [CNO/Fe] as responsible for the blanketing. As the localized bands CN, $C_2$ and CH are not enough to explain it, we have used 28 plausible diatomic molecular patterns (two examples are shown in Fig. 1) and a synthesis technique to suggest possible absorbers contributing to this blanketing. Fig. 2 presents the molecular model and the residuals shifted by a constant, where a NH localized band is clear. The CO molecule resulted the dominant distributed absorption ($\approx 50\%$ in flux of the total blanketing), followed by SiN (20%). Definite identifications of the absorbers need much higher resolution than that in GS's library (20-40Å). On the other hand, the methods proved to be very efficient for analysing the 47 Tuc population by means of stellar synthesis and molecular synthesis.

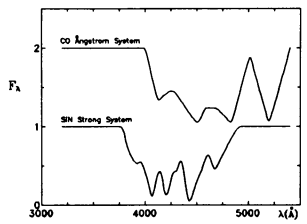


Fig. 1

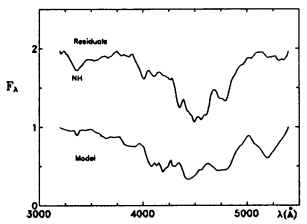


Fig. 2

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