SPECTRUM SYNTHESIS OF FeH IN M STARS[1]

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We synthesize the Wing-Ford band (WFB) of Iron Hydride (FeH) at 998 nm, obtaining an excelent fit of the computed spectra to medium resolution (0.08 nm) observations of three M dwarfs: Gl 229, Gl 832, and Gl 842. The WFB is a well known indicator of the surface gravities of the coolest stars and has been used to study the low mass star content of galaxies (Couture & Hardy 1993 and references therein). The model atmospheres adopted were interpolated in the Kurucz (1992) grid. The spectral range computed goes from 980 to 1020 nm and is shown to be mainly dominated by FeH and CN lines. The behavior of the model spectrum against variations of effective temperature (T_{eff}) and surface gravity is studied, for $T_{eff} > 3500$ K. For temperatures below 3600 K, the response of the WFB is shown to be dominated by FeH lines, so that its equivalent width increases for increasing surface gravities. For higher temperatures, the FeH lines become fainter and the CN lines begin to dominate the response of the WFB to stellar parameters, making its equivalent width decrease for increasing gravities. As a result, the WFB can be used as a good gravity index only for dwarfs cooler than 3600 K. In order to investigate and calibrate the behavior of this index as a function of stellar parameters for cooler atmospheres, we are working on the inclusion of the models of Allard & Hauschildt (1995) for dwarfs and Plez et al. (1992) for giants. This work is part of an ongoing project which aims to study the relative contribution of M dwarfs and giants to the integrated light of elliptical galaxies in the near infrared, using a set of indicators of stellar parameters, such as the WFB, the NaI near infrared doublet, the Ca II triplet and TiO bands located in the same spectral region.

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THE EVOLUTION OF THE ABUNDANCE RATIOS OF NEUTRON CAPTURE ELEMENTS

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We study the evolution of the abundance ratios of the neutron capture elements Sr, Y, Zr, Ba, and Nd, taking into account the yields from different nucleosynthetic sites in order to estimate the primary and secondary behavior of these elements. The data were taken in the literature for dwarfs and subgiants of type F and G. We show that the abundance ratios agree better with the theory when oxygen, rather than iron, is used as reference seed element. There are two arguments supporting this result: the s-process production can be a function of oxygen abundance, and oxygen is a better metallicity indicator than iron. When the primary and secondary yields are included in a simple model of the chemical evolution of the Galaxy, the need of a non negligible r-process production in the early epochs can be easily explained. Three methods to estimate the primary to secondary yield ratios are presented. The primary to secondary yield ratios for Ba, Nd, and Zr —found by these methods— are in good agreement. The analysis for Sr may be prejudicated by the small number of abundance determinations of this element in the literature. The evolution of yttrium abundance ratios suggests that the production of Y has a greater contribution of the s-process than what is generally assumed.

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CHROMOSPHERIC MODEL FOR Be STARS

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We propose a chromospheric model for Be stars consisting of:

(i) a standard Kurucz photosphere

(ii) a temperature minimum region at the base of the wind

(iii) a quasi-spherical region where the temperature rises up to values close to the effective temperature of the star and the expansion velocity increases with radius

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