

X Sources in δ Scuti Stars: an Ultraviolet Study of 71 Tau

L.E. Pasinetti Fracassini¹, L. Pastori², F. De Nile¹, E. Poretti², E. Antonello²

¹*Dipartimento di Fisica, Università degli Studi di Milano, Milano, Italy,*

²*Osservatorio Astronomico di Brera, Milano, Italy*

IUE observations of δ Scuti variables were planned to study the correlations between chromospheric activity and dynamics of pulsations, convection, rotation and to search for evidence of mass loss. So far we observed the following stars: ρ Pup, β Cas, α^1 Eri, K2 Boo, τ Peg, 69 Tau, 71 Tau and τ Cyg. Results and discussions on our survey may be found in Pasinetti Fracassini et al. (1990) and Fracassini et al. (1991).

Ultraviolet spectroscopic data (6 LWP and 3 SWP spectra) of 71 Tau were obtained with IUE in the year 1990, spanning an interval of 5^h35^m and covering about 1.5 cycles of the pulsation period. The period, derived from new photometric observations, is 4^h32^m with an amplitude of $0^m.028$. This variable is the most intense X-ray source in the Hyades cluster according to the results of Einstein Observatory.

The MgII lines exhibit an anomalous absorption profile; moreover some variations spanning for about 0.5 \AA , confirmed also by the statistical analysis, occur during the pulsation phases; the features may also be interpreted as emission. Emissions were not detected in the highly ionized transition-region lines which are however underexposed in our spectra. The complete absence of chromospheric or transition region line emission was claimed by Zolcinski et al. (1982), who suggested that the apparent absence of MgII emissions may be ascribed to rotational smearing of the weak emission line in the core of the strong absorption line. CII emission, on the contrary, was detected by Walter et al. (1988); therefore the presence of chromospheric emission in 71 Tau is still an open problem. Finally, in our spectra no narrow absorption core was detected in the MgII k line; this feature was found by Zolcinski et al. (1982) and interpreted by the same authors as an interstellar absorption; probably the feature may be ascribed to the physical properties of the star.

References:

- Fracassini, M., Pasinetti Fracassini, L.E., Pastori, L., Teays, T.J., and Mariani, A.: 1991, *Astronom. Astrophys.* **243**, 458.
- Pasinetti Fracassini, L.E., Pastori, L., Schmidt, E.G., and Teays, T.J.: 1990, in "Confrontation between stellar pulsation and evolution", eds. C. Cacciari, G. Clementini, Bologna May 28-31 1990, p.230.
- Walter, F.M., Schrijver, C.J., and Boyd, W.: 1988, in "A Decade of UV Astronomy" with IUE, *ESA SP-281*, Vol.1, p.323.
- Zolcinski, M.C.S., Anthiocos, S.K., Stern, R.A., and Walker, A.B.C.: 1982, *Astrophys. J.* **258**, 177.