UV OBSERVATIONS OF MV LYRAE

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The cataclysmic variable MV Lyrae was observed in a low state ($m_B = 18$) with the International Ultraviolet Explorer from 1200 to 3000 Å, on Dec 27, 1980. Weak emission and absorption features are apparent over a well defined continuum (see Fig. 1).

The ultraviolet observations are combined with published optical and near infrared data obtained when the source was at a comparable optical magnitude (see Fig. 2). Two alternative interpretations of the resulting energy distribution seem acceptable. In the former the continuum is attributed to a hot white dwarf with a black body temperature $T_{bb} = 6-7 \times 10^4$K and emitting area $A \approx 10^{18}$ cm$^2$ plus the contribution of a red dwarf companion ($T_{bb} = 3000$ K, $A \approx 4 \times 10^{21}$ cm$^2$). This model predicts a negligible X-ray flux.

Alternatively, a large portion of the ultraviolet emission could be ascribed to a hot spot ($T_{bb} = 5 \times 10^5$ K; $A \approx 10^{16}$ cm$^2$) similarly to the case of AM Her, SS Cyg and U Gem (see Fabbiano et al, 1980). In this case the overall energy distribution requires a third component of intermediate temperature ($T \approx 3 \times 10^4$ K, $A \approx 10^{18}$ cm$^2$) which could be attributed to a tiny disk. In this picture the soft X-ray flux could be as high as that observed in 1977 by Mason et al, when the source was presumably in a higher optical state.

Simultaneous observations in the UV and soft X-ray bands are needed to discriminate between the two models.

This work is based on I.U.E. observations collected at VILSPA.

REFERENCES

Mason, K.O., Kahn, S.M., Bowyer, G.S., 1979, Nature 280, 568
Fig. 2. - Energy distribution of MV Lyrae. Triangles correspond to the 1980 May-August photometry by Schneider et al. (1981); the square with error bar corresponds to the 1980 December photometry by Romano and Rosino (private communication). Curve $a$ is the sum of curve $b$, a black body distribution with $T=6.5\times10^4$ °K and area $A=1.5\times10^{18}$ cm$^2$, and curve $c$, representing the non collapsed secondary ($T=3\times10^3$ °K, $A=4\times10^{21}$ cm$^2$).