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REQUEST FOR COOPERATION FROM OPTICAL AND RADIO OBSERVERS

Time has been allocated on the International Ultraviolet Explorer satellite jointly by NASA, the British SRC, and ESA to three groups based at JILA, Colorado, USA, Armagh Observatory, Northern Ireland and Catania Observatory, Sicily to observe a Flare Star/BY Draconis variable. The total time allocated is many times the mean inter-arrival time between flares and comparable to the period of the BY Dra variations. As a result it is hoped to be able to monitor changes taking place in the star's UV spectrum during a flare and during a complete cycle of the BY Dra variations, with particular reference to those lines indicative of conditions in the chromosphere, transition region and lower corona.

AU Mic (=HD 197481; V=8.9, B-V =+1.4 and U-B =+1.1; $\alpha(1980)=20^h44^m54^s$, $\delta(1980)=-31^o24'.7$) has been chosen as the most suitable target. It is known to be both a Flare Star (Harding, 1970 and Kunkel, 1973) and a BY Dra variable of relatively large amplitude and a period of 4.865 days (Torres et al. 1972). The amplitude of the BY Dra variations as reported by Torres et al. is $\Delta V \sim 0^m.3$ making it one of the largest amplitude BY Dra variables known. Harding (1970), observing with a 1-meter telescope, recorded one flare per 2.4 hours in the Johnson U-band under adverse, bright-sky conditions, while Kunkel (1973) registered 31 U-band flares with a 1.5-meter telescope in 6.7 hours of observation, many of which were of much smaller amplitude than those of Harding.

A total of nine eight-hour shifts on IUE has been assigned to the project totalling 72 hours in all. Thus as many as 30 moderately large flares may be recorded during this period. A single UV flare spectrum has already been recorded with IUE on

the star Gliese 867A and the UV out-of-flaring spectrum of this star is similar to that of AU Mic (Andrews, Butler and Byrne 1980). In addition it is hoped to spread the time over about four days to maximize the phase coverage with respect to the BY Dra variations. In order that the best possible use be made of these UV data at least optical photometry of the programme star of a type suitable for detecting flares and the phase of the BY Dra variations will be needed. To this end we are appealing to all optical observers in the southern hemisphere or at the lower northern latitudes, spread over as wide a range of longitude as possible to cooperate in providing the necessary coverage. In addition we would like to appeal to any who may be able to secure spectra of AU Mic during the appropriate times to do so particularly if these can be time-resolved. In order that the information be as complete as possible an invitation is also being extended to radio observers and to a number of groups involved in X-ray astronomy.

Observations should consist of continuous photometric monitoring in the near ultraviolet (e.g. Johnson U or similar wavebands) with integration times of between 1^s- 10^s. It is important for investigating the BY Dra phenomenon that we be able to establish the amplitude and phase at the time of the IUE observations. Measurements should therefore be made of AU Mic and at least two nearby comparison stars of similar colour in U, B and V at least once but preferably two or three times per night. Spectroscopic observations should cover as much of the visible spectrum as possible with preference being given to the blue end longward of, but including, Hβ.

Final observing dates have not yet been set but one of two intervals is being sought. The first is during the second week of July and the second would be in the first week of August. As soon as they are available final details will be published in this bulletin but individual observers interested are invited to contact the undersigned.

P.B. BYRNE
Armagh Observatory
Armagh BT61 9DG
Northern Ireland

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