COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 3244

Konkoly Observatory
Budapest
29 September 1988
HU ISSN 0374-0676

THE MECHANICAL ENERGY BUDGET IN STELLAR FLARES

Flares on the Sun and on dKe-dMe stars are now widely believed to be basically similar in their origin and development. This is in spite of the fact that stellar flares are normally at least 10^3 and often 10^5 times more energetic than even the largest of their solar counterparts. In general, both phenomena are believed to arise from the rupture of a stressed magnetic structure, commonly termed a magnetic loop, which by magnetic buoyancy is forced upwards through the photosphere into the corona/transition region, where reconnection of the magnetic field occurs followed by a considerable release of energy. Initially this energy is believed to be carried by fast particles, such as electrons or protons, which, collimated by the magnetic field, move down towards the surface of the star where they bombard denser material and give rise to local heating and chromospheric evaporation (e.g. Doyle et al., 1985).

The major objective of this international corroborative project (involving Armagh Observatory, the Institute for Astronomy at the University of Catania, Goddard Space Flight Center, the Joint Institute for Laboratory Astrophysics of the University of Colorado, the Rutherford-Appleton Laboratory, the Laboratoire de Physique Stellaire et Planetaire du CNRS and the Institute of Astrophysics at Oslo) is to collect multiwavelength, i.e. optical, ultraviolet and X-ray; and in particular to obtain spectral and temporal resolution data of the higher Balmer lines in order to look for doppler motions. Evidence for such mass motions has been seen in low resolution spectroscopy (Doyle et al., 1988, Phillips et al., 1988). Such data will enable us to form some estimate of the mechanical energy budget from doppler shifts in spectral lines and compare with the X-ray energy. For this program, two ESA IUE 8 hr. shifts and one GINGA (i.e. the Japanese X-ray satellite) 24 hr. shift has been allocated. In addition we have requested three European Southern Telescopes and the Anglo-Australian Telescope to do high resolution spectroscopy (covering the higher Balmer lines, i.e. Hγ, Hδ etc., with a spectral resolution of $\approx$1Å and the time resolution of $\approx$1 min.) and to

monitor the overall activity of the star in UBVRI and K bands. VLA time has also being requested.

We welcome the participation of any observer who can contribute either photometric or spectroscopic observations. Interested observers are requested to contact the undersigned and to notify us of their telephone and telex numbers and/or their electronic mail address.

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