

## MONITORING OF VARIABLE STARS ON A LONG TIME-BASELINE

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**ABSTRACT.** The functioning of a project for systematic observations of variable stars on a long time scale is described.

Today photometric monitoring of variable stars during a time span of several years is almost impossible for observers who collect their data at the large visitor-operated observatories. The study of variable stars with periods of the order of many years for example can only be accomplished by the steady observation of these stars during several decades, and there is no way for a single observer or investigator to successfully undertake such an enterprise. Therefore joint research in a dedicated team seems to be fundamental.

In 1982 a dozen of active variable star observers belonging to the majority of the European member-countries of the European Southern Observatory started an international long-term collaboration with the intention to study a number of selected variables of different type over a timespan of at least one decade. Individual observing programmes were merged, and the most interesting stars were grouped into several separate research topics. For each field of research, one or two principal investigators were appointed. These persons are responsible for the coordination of the work within their own section.

Table I lists all sections, and the corresponding principal investigators.

TABLE I. Principal Investigators for each section

1. Pre-main sequence stars	P.S. The, H. Tjin a Dijie
2. Ap stars	H. Hensberge, J. Manfroid
3. Eclipsing Binaries	H.W. Duerbeck, A. Bruch
4. Be stars	D. Baade, P. Harmanec
5. Supergiants	B. Wolf, M. de Groot
6. X-ray sources	M. Burger
7. Events of Opportunity	C. Sterken
8. Peculiar Late-type stars	F. Querci, C. Zwaan

Section 7 consists of all objects which need immediate monitoring due to the occurrence of an unexpected event (e.g. flares) or due to exceptional observational circumstances (e.g. simultaneous ground-based and space observations).

The actual list of objects contains 150 stars; about 50% of them are observed with a frequency of one observation per night, and the remaining stars are observed less frequently. All measurements are performed in a differential way relative to one or two comparison stars. A 50 cm or a 60 cm telescope is used, and all observation is done in the Strömrgren uvby system.

Since October 1982, 20 observing runs have already been granted by ESO. The observers are participants who volunteer to carry out the measurements according to the adopted scheme, and each observing run has a typical length of about three to four weeks. After termination of each observing run, all data are sent on magnetic tape to Dr. J. Manfroid at the University of Liège, where the central reduction is done. The final results are mailed to the principal investigators, who in turn redistribute the results to the participants in their section. The publication of the scientific results is done by those participants who carried out the analysis, but the data are separately published by the observers.

The project offers several interesting possibilities. First of all an important contribution to collecting valuable data is made. Second, the program leads to a highly efficient and economic way of using a small telescope, and it also prevents inactivity of useful instruments.

In principle anyone can apply for data. Just send to the corresponding principal investigator your application with a clear description of why you need data on a particular object, which precision you expect, and how long and how often you wish it observed. Do not forget to send the finding charts, and coordinates (epoch 2000.0) for the program stars and the comparison stars.

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#### DISCUSSION

*Millis:* You listed one of your categories as "Events of opportunity". Could you give examples of these?

*Sterken:* 1) If you were expecting a flare in a certain object,  
2) simultaneous observations with IUE and/or another satellite, or 3) a possible expected eclipse.