

THE WIDE-FIELD PLATE DATABASE: A NEW TOOL IN OBSERVATIONAL ASTRONOMY

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1. Introduction

Since the first applications of wide-field photography in astronomy nearly 2 million plates and films have been obtained and stored in archives all over the world. The Wide-Field Plate Database (WFPDB) provides astronomers with detailed information about the wide-field photographic observations. Its preparation started in 1991 as one of the main projects initiated by the Working Group on Wide Field Imaging at the IAU Commission 9.

2. Main Features of the Wide-Field Plate Database

An important part of the WFPDB is the List of Wide-Field Plate Archives (LWFPA), which summarizes the data for the archives and the observational instruments. Its latest version is accessible in the WFPDB WWW home page at <http://www.wfpa.acad.bg>. The number of archives, instruments and plates in the LWFPA is given in Table 1.

The data in the WFPDB originates from quite different plate catalogues. The original data undergoes a complex reduction procedure for standardization of the observation parameters: coordinate and time transformations to J2000 and UT, object name, emulsion and filter designations, decoding of coded data, correction of errors, supplementing of missing data, and structuring of non-structured data. The number of archives, instruments and plates incorporated in the WFPDB before August 1996 are included in Table 1.

TABLE 1. Number of archives, instruments and plates in the List of Wide-Field Plate Archives and in the Wide-Field Plate Database (August 1996)

		Archives	Instruments	Observatories	Plates
Direct observations	LWFPA	277	215	75	1 830 435
	WFPDB	87	83	26	397 324
Spectral observations	LWFPA	26	24	20	51 816
	WFPDB	13	13	11	9 321
Total	LWFPA	281	219	93	1 882 251
	WFPDB	88	83	29	406 645

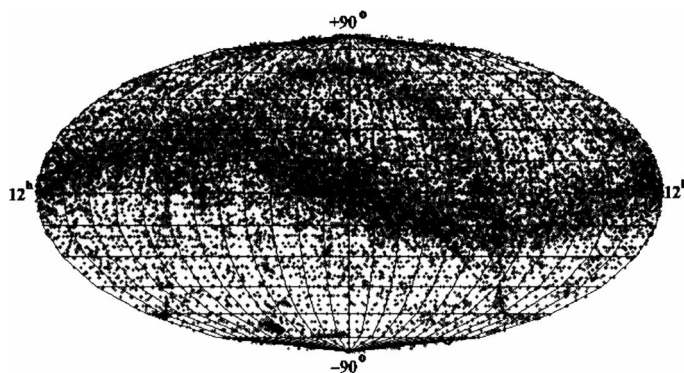


Figure 1. All-sky distribution of the plates in the WFPDB

A sky map of the observations in the WFPDB (equatorial coordinates, equal area projection) is shown in Figure 1. Figure 2 shows the distribution of observations according to the spectral band. WFPDB is currently accessible only in batch mode by user requests sent to wfpdb@wfpa.acad.bg. We plan to enlarge considerably of the WFPDB in the near future, with data from the Harvard College Observatory Plate Collection, the Bamberg and GRO plate archives, and others. Another important development of the WFPDB will be its installation on a HP 9000/712/80 workstation under the management of ORACLE DBMS V7.2 and the providing its on-line access via the INTERNET.

3. Some Applications of the WFPDB

Salvaging of Astrometric Treasures (Broshe et al. 1994). Searches in the WFPDB have been done for this project whose aim is to save the astrometric and photometric information from the old *Carte de Ciel* plates.

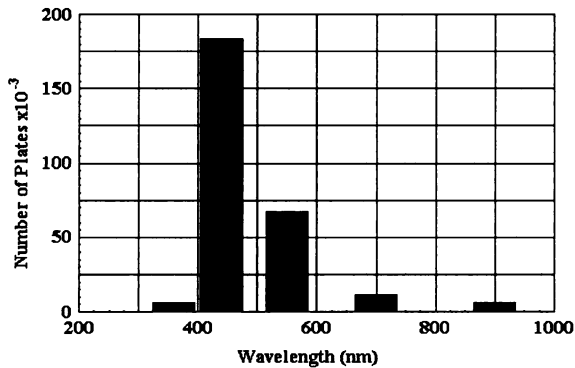


Figure 2. Number of direct plates in the WFPDB versus spectral band. Observation are roughly grouped in 5 bands corresponding to U, B, V, R, I

Existence of flare cycles in late dwarf stars. This project, suggested by R. Gershberg (Crimean Astrophysical Observatory), uses patrol observations of stellar aggregates for studies of red dwarfs. By his request 87 plates have been found in the WFPDB from the archives of the Asiago, Heidelberg, Kiso, Rozhen, Siding Spring and Tautenburg observatories, for the stars PZ Mon and V577 Mon.

Search for optical analogues of gamma ray bursts. Mutafov *et al.* (1995) has used the WFPDB to search for archival plates with possible optical analogues of GRB.

Light Curve of T Tauri and variable stars. For determination of the light curve of V 350 Cep (Semkov 1996) the WFPDB was searched for deep photographic plates in the field of NGC 7129. 44 plates from the Asiago observatory archive obtained in the period 1971–1977 have been found.

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