

mCPod: the on-line database of photometric observations of magnetic chemically peculiar stars

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Abstract. mCPod, or *On-line database of photometric observations of magnetic chemically peculiar stars*, is a unique thematic archive of photometric time series of the magnetic chemically peculiar (mCP) stars in optical and near-IR bands. Nowadays, the database contains almost 150 000 photometric measurements of the 151 Galactic mCP stars and the archive is constantly updated with recently published data. This poster briefly describes current status of the project and our plans for further development.

Introduction

We collected photometric observations of Galactic mCP stars available via NASA ADS and CDS SIMBAD/VizieR services into single relational database. We also supplied unpublished data obtained by private communication. The measurements were performed in optical and near-IR bands in various photometric systems, a.i. Strömgren *uvby* system (Strömgren, 1966), HIPPARCOS (ESA, 1997) system, Johnson international photometric system (Johnson, 1951), Geneva (Golay, 1972), 10-colour photometry (Schöneich et al., 1976), Walraven (Walraven & Walraven, 1960) and Maitzen (Maitzen, 1976) systems. Most of the stars contained in the database are listed in Table 1. The on-line query interface allows to extract ASCII table of the requested data that was originally designed for data analysis tools developed by us (Mikulášek 2007). We would like to develop more flexible export filters to meet everybody's needs. They will come with the next generation mCPod database.

Database structure

The inferior relational model, currently in use, is remnant from pilot project and soon it will become obsolete. Therefore, here we describe the new optimized and complex database structure that will be used in future versions. The structure can be seen on Figure 1. The primary tables are *Star*, *Reference*, *Datapoint*, *Dataset* and *Session*. All star records are kept in the *Star* table. Each star has its own internal ID and also cross-ID (in our case HD number) used for SIMBAD search. The *Reference* table collects all references and the *Datapoint* table contains all individual photometric measurements. The *Dataset* table groups data points into time series and the *Session* table sorts these time series into "sessions", i.e. datasets from the same target acquired with identical instrument setup and observing conditions, that share the same reference paper. The *Session* table basically defines relation between *Star*, *Reference* and *Dataset* tables.

Database code and query interface

The database itself is based on MySQL InnoDB solution. Public access is provided by object oriented web application written in PHP 5 running on Apache web server (see Figure 2). The query interface is accessible at:

<http://astro.physics.muni.cz/mcpod/>

Whole interface is currently being redesigned to provide better functionality in future versions.

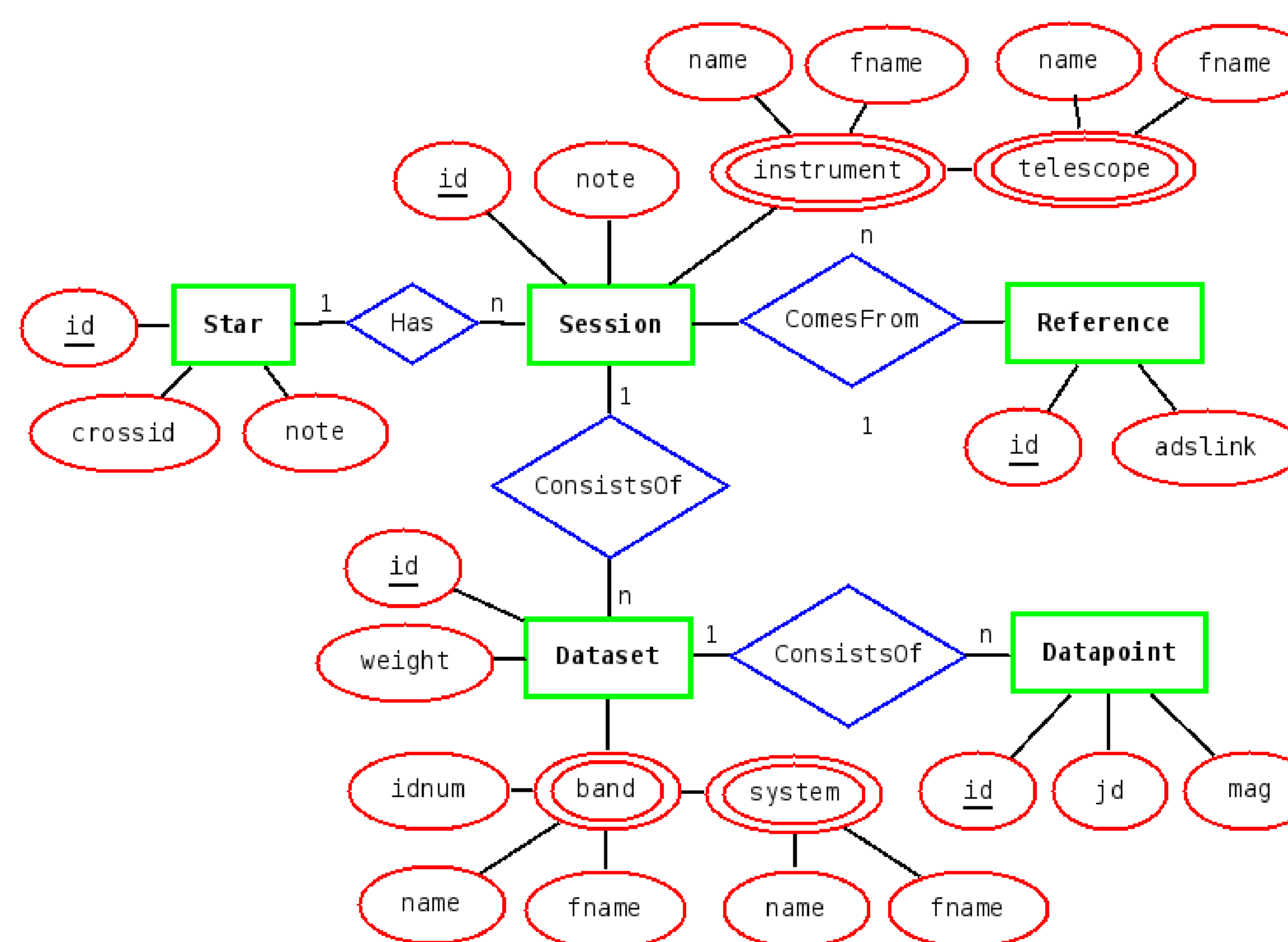


Figure 1. Database structure overview

mCPod and the Virtual Observatory

The main purpose of our project is to simplify multi-band analysis of available data acquired by different observing facilities. This fully corresponds with the actual goals of the Virtual Observatory (VO). Therefore, its existence confirms the general need for implementation of photometric time series into the VO framework.

Scientific output

The archive is operational since 2006 and it is still under development; nevertheless, it has already produced an interesting scientific output, a.i. discovery of the extraordinary rotational braking of He strong CP star HD 37776 (Mikulášek 2008).

Database Query Form

Star: HD (asterisk for all stars included in database)
 JD (<-) (starting Julian Date 2400000+, without restriction left empty)
 JD (>=) (finishing Julian Date 2400000+, without restriction left empty)

Johnson	<input type="checkbox"/>	U	<input type="checkbox"/>	B	<input type="checkbox"/>	V	<input type="checkbox"/>	R	<input type="checkbox"/>	R _c	<input type="checkbox"/>	I	<input type="checkbox"/>	J	<input type="checkbox"/>	H	<input type="checkbox"/>	K	<input type="checkbox"/>	L	<input type="checkbox"/>	M
Strömgren	<input type="checkbox"/>	u	<input type="checkbox"/>	v	<input type="checkbox"/>	b	<input type="checkbox"/>	y	<input type="checkbox"/>	c ₁	<input type="checkbox"/>	m ₁	<input type="checkbox"/>							(b-y)	<input type="checkbox"/>	
Hipparcos	<input type="checkbox"/>	H _p	<input type="checkbox"/>	B _p	<input type="checkbox"/>	V _p	<input type="checkbox"/>															
Geneva	<input type="checkbox"/>	U-B ₁	<input type="checkbox"/>	B ₁ -B ₂	<input type="checkbox"/>	B ₂ -V ₁	<input type="checkbox"/>	V ₁ -G	<input type="checkbox"/>	U	<input type="checkbox"/>	B	<input type="checkbox"/>	V	<input type="checkbox"/>	B ₁	<input type="checkbox"/>	B ₂	<input type="checkbox"/>	V ₁	<input type="checkbox"/>	G
10 colour photometry	<input type="checkbox"/>	U	<input type="checkbox"/>	P	<input type="checkbox"/>	X	<input type="checkbox"/>	Y	<input type="checkbox"/>	Z	<input type="checkbox"/>	V	<input type="checkbox"/>	HR	<input type="checkbox"/>	S	<input type="checkbox"/>	MR	<input type="checkbox"/>	DR	<input type="checkbox"/>	
Walraven	<input type="checkbox"/>	V	<input type="checkbox"/>	B	<input type="checkbox"/>	L	<input type="checkbox"/>	U	<input type="checkbox"/>	W	<input type="checkbox"/>											
Maitzen and others	<input type="checkbox"/>	g ₁	<input type="checkbox"/>	g ₂	<input type="checkbox"/>	a	<input type="checkbox"/>	4200Å	<input type="checkbox"/>	5360Å	<input type="checkbox"/>											

None filter selected means all filters selected.

Figure 2. Basic query form

References

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Table 1. List of mCP stars

HD	Name	Sp. & pec.
2453	GR And	A1 SrEuCr
3322	HR 149	B8 HgMn (!)
3980	ξ Phe	A7 SrEuCr
4778	HR 234	A1 SrCrEu
5737	α Scl	B6 He wk
5797	V551 Cas	A0 CrEuSr
6178	σ Scl	A2V (p?)
6491	AS Scl	F2IV/V
6532	AP Scl	A3 SrCr
7676	VV Scl	A5 SrCrEu
11187	BD+54 393	A0p Si
14392	63 And	B9 Si
15144	BD+38 2827	A5 SrCrEu
15980	BD+39 571	B9 Si
19832	56 Ari	B8 Si
22316	HR 1094	B9 CrHgSi
22470	20 Eri	A0 Si
26571	V1137 Tau	B8 Si
27309	56 Tau	A0 SiCr
28843	HR 1441	Bp He wk
29009	46 Eri	B8 Si
30849	SY Pic	A5 SrEuCr
32633	HZ Aur	B9 SiCr
32650	HR 1643	B9 Si
32966	TU Lep	B9 Si
34364	AR Aur	B9.5
35298	V1156 Ori	B6 He wk
36668	V1107 Ori	B7 He wk Si
37210	V1133 Ori	B9 He wk Si
37776	V901 Ori	B1 He str
38823	V1054 Ori	A5 SrEu
40312	θ Aur	A0 Si
41089	TW Col	B9 SrEuCr
43819	V1155 Ori	B9 Si
49333	12 CMa	B7 He wk Si
49606	33 Gem	B8 He wk Si
50169	BD-01 1414	A3 SrCrEu
51418	NY Aur	A0 HoDy
54118	HR 2683	A0 Si
62140	49 Cam	A8 SrEu
66605	QQ Pup	A0 Si
71866	TZ Lyn	A1 EuSrSi
72968	3 Hya	A2 SrCrEu
74196	HR 3448	B7 He wk
74521	49 Cnc	A1 SiEuCr
79158	36 Lyn	B9 He wk
81009	HR 3724	A3 CrSrEu
83368	HR 3831	A8 SrCrEu
86592	V359 Hya	A0 SrEu
90044	25 Sex	B9 SiCrSr
90569	45 Leo	A0 SrCrSi
94660	HR 4283	A0 EuCrSi
96616	46 Cen	A3 Sr
96707	HR 4330	A8 Sr?
98088	HR 4369	A8 SrCrEu
103192	β Hya	B9 SiCrSr
111133	HR 4854	A1 SrCrEu
114365	V824 Cen	A0 Si
115708	HH Com	A3 SrEu
116458	67 Mus	A0 EuSiCr
119213	HR 5153	A3 SrCr
120198	84 UMa	A0 EuCr
125248	HR 5355	A1 EuCr
125630	BS Cir	A2 SiCrSr
126515	FF Vir	A2 CrSr
133029	HR 5597	B9 SiCrSr
134214	HI Lib	F2 SrCrEu
137909	β CrB	A9 SrEuCr
142070	HIP 77752	A0 SrCrEu
142990	HR 5942	B7 He wk
144667	HR 6000A	A0 He wk
152308	49 Her	A0 CrEu
159376	52 Oph	B9 Si
164429	HR 6718	B9 SiCrSr
168733	HR 6870	B8 TiSr
170973	HR 6958	A0 SiCrSr
171247	HR 6967	B8 Si
171782	QV Ser	B9 SiCrEu
177410	HR 7224	B9 Si
179527	19 Lyr	B9 Si
184905	V1264 Cyg	A0 SiCr
187474	HR 7552	A0 EuCrSi
188041	HR 7575	A6 SrCrEu
189832	V4133 Sgr	A6 SrCrEu
192678	V1372 Cyg	A2 Cr
192913	NW Vul	A0 SiCr
193722	HR 7786	B9 Si
197018	HR 7911	B7 Mn
200311	V2200 Cyg	B9 SiCrHg
201601	γ Equ	A9 SrEu
203006	θ ¹ Mic	A2 CrEuSr
204411	HR 8216	A6 Cr
205087	HR 8240	B9 Si
205637	ε CapA	B4Si
210071	HR 8434	B9 SiCrHg
215441	GL Lac	B9 Si
217833	HR 8770	B8 He wk
219749	HR 8861	B9 Si
221394	HR 8933	A0 SiSrCr
221760	ι Phe	A2 SrCrEu
223358	HR 9017A	B9 SiSrCr
223640	108 Agr	B9 SiSrCr