ADSD

Libraries of observed spectra: the Asiago Database of Spectroscopic Databases

Rosanna Sordo

8th RVS Workshop Padova

ADSD, why?

- ADS
- CDS
- existing compilations of catalogs (Hypercat, D.Montes home page…)

time consuming search in the literature

ADSD: project overview

ADSD collects all databases of observed stellar spectra published in literature (electronic data, printed tables, plots) covering the 70-22000 Å range.

It provides an homogeneous set of information to easily compare different catalogs.

ADSD is made of:

- tables
- cards
- web site

Tables: UV, OPT, IR

authors and year of publ.		range (Å)	D (Å/pix) (Å/*mm*)	R o R_P (Å)	sampl. (Å)	N. stars	spectrum	l.c.	detector/ instr.	data
Adelman+	1989	3300–10800		4–50		207	O9–K4, pec	I–V	Sp.Sc.	rel
Alekseeva+	1997	3200–7500		50	25	602	O5–M4	I–V	Sp.Sc.	abs
		3200–10800		100	25	278	O5–M4	I–V	Sp.Sc.	abs
Allen, Strom	1995	5600–9600	1.9	6	1.97	102	F1–M4	V	CCD	counts
Allende Prieto+	2004	3620–10440		*50000*	0.01	91	A0–K3	II-V	CCD	norm
		3620–9210		*45000*	0.01	28	F2–M0	III–V	CCD	norm
Andrillat+	1995	8375–8770	*33*	1–1.5	0.8	76	O5–G0, pec	I–V	CCD	norm
Appelquist+	1983	5185–8700	*4.9*	0.195	0.04	1	γ Tau (K0)	III	plate	norm
Barnbaum	1994	5080–7850	*2.84–4.35*	*47000*	0.043÷0.065	89	C		CCD	counts
Barnbaum+	1996	4000–7000	0.85–3.25	1.6–6.5	0.85÷3.25	72	C, Ba		several	counts
Biryukov+	1998	3425–7525		50	50	82	B8–K1	III–V	Sp.Sc.	abs
Breger	1976	3200–12000		10–100	50–200	609	O5–K7	I–V	Sp.Sc.	rel
Burgasser+	2003a	6300–10100	1.86	7	1.86	13	T	V	CCD	abs
Burnashev+	1985	3200–7350		25	25	1557	O5–M7, WR, C, S	I–V	Sp.Sc.	abs
Carquillat+	1997	8380–8780	*33*	2	0.8	54	A2–M4, C, S	I–V, sd	CCD	norm
Cenarro+	2001	8348–9020	0.79–0.85	1.5–2.13	0.85	706	O6–M8	I–V, sd	CCD	rel

Card: first page, the catalog

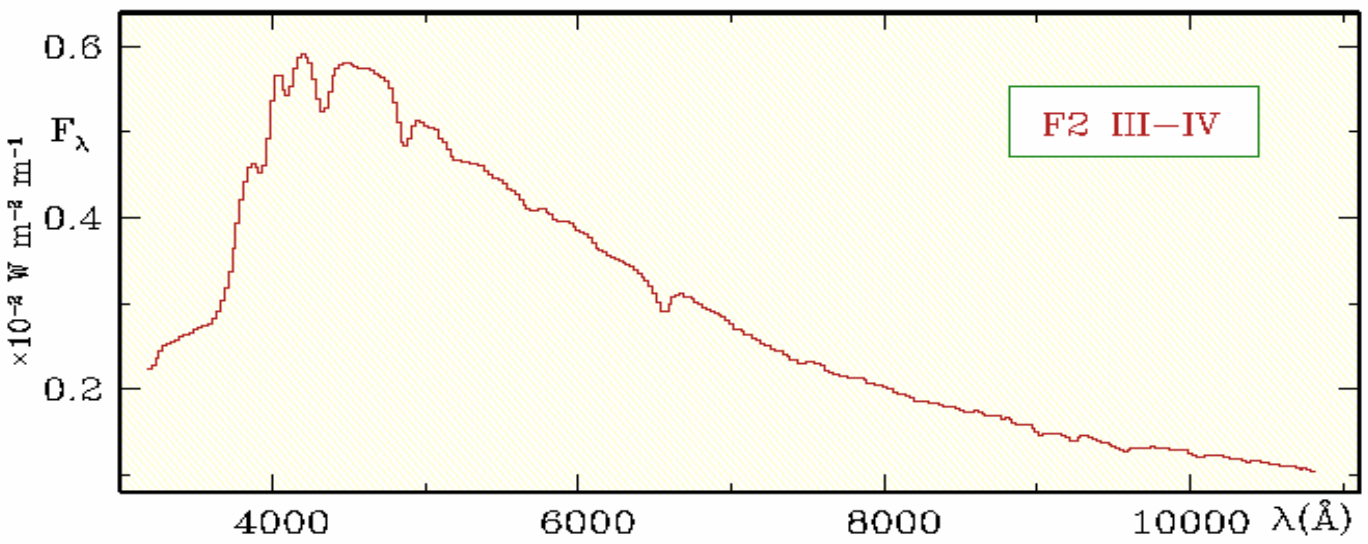
Alekseeva *et al.* (1997)

The Pulkovo spectrophotometric catalogue, uniformly mapping the MKK system with spectra of high flux accuracy (2%, or better). The telluric absorptions have been compensated for to produce

general information

spectral range (Å)	3200–10800	N° of entries	609
resolution (Å)	100	spectral type	O5–M4

data example

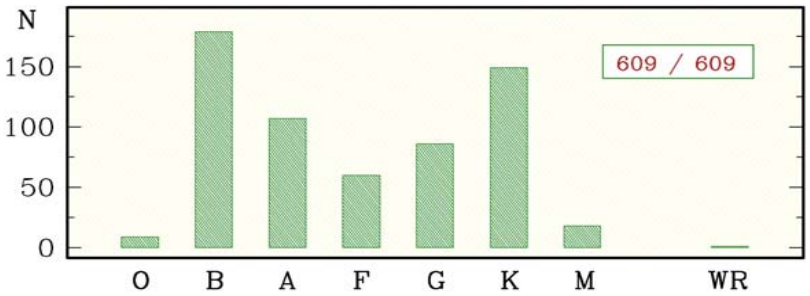


Card: second page, the stars

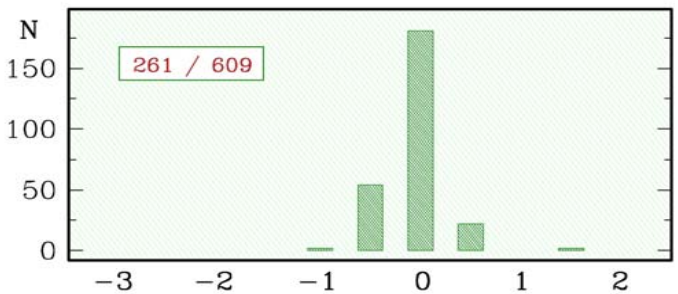
Information on atmospherical parameters are not always given by the authors…

SIMBAD

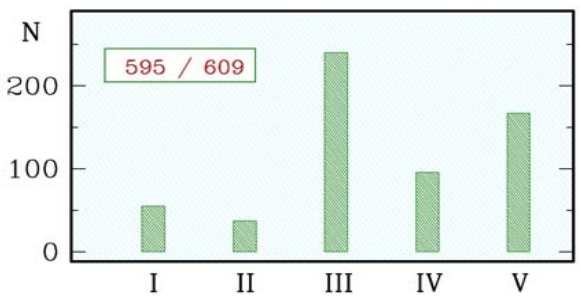
spectral type coverage



[Fe/H] distribution



luminosity class distribution



Web site

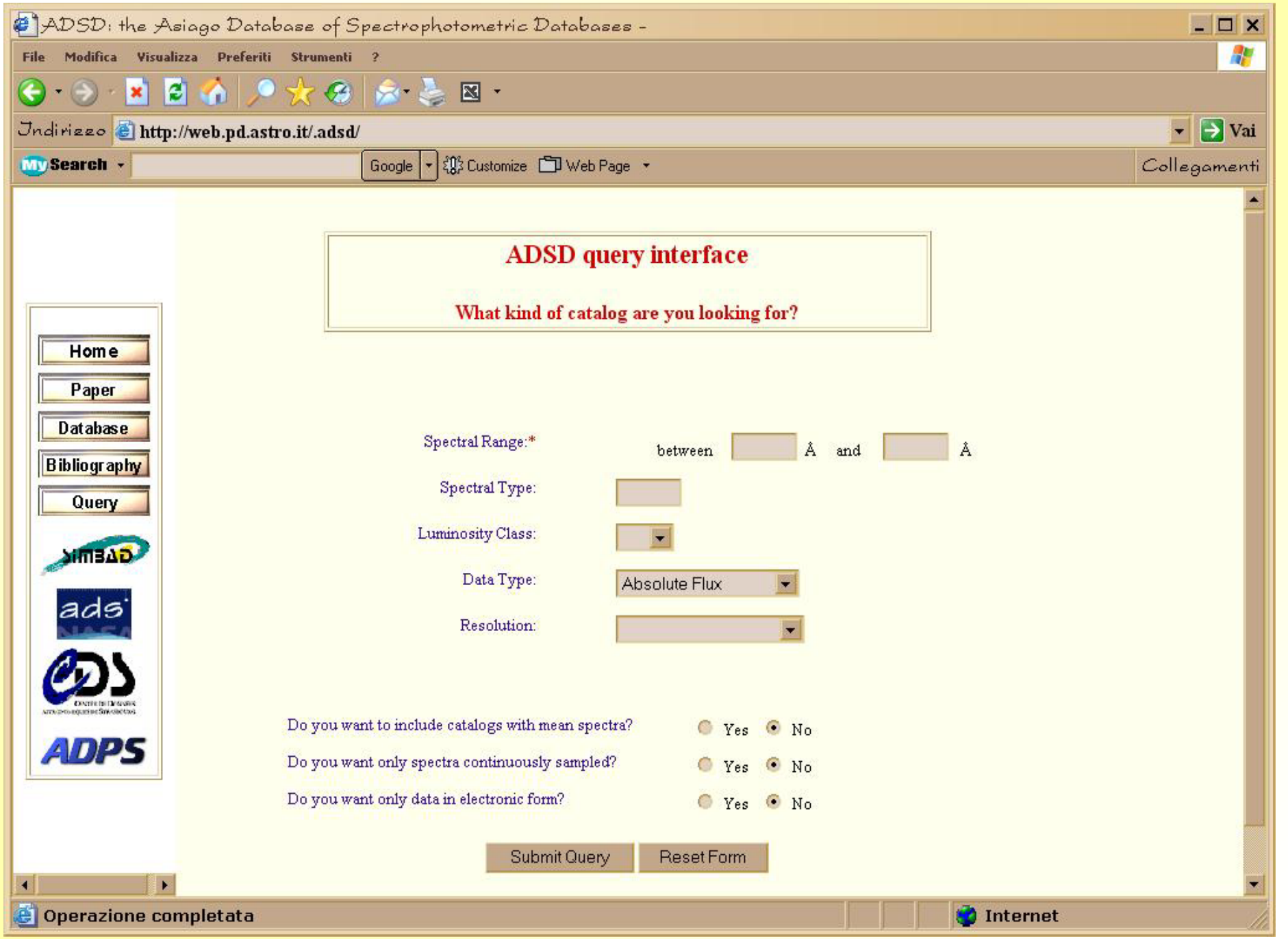
http://ulisse.pd.astro.it/ADSD/index.html

The web site gives direct access to tables and cards.
In addition, a PHP interface allows to browse the library.

The user can:

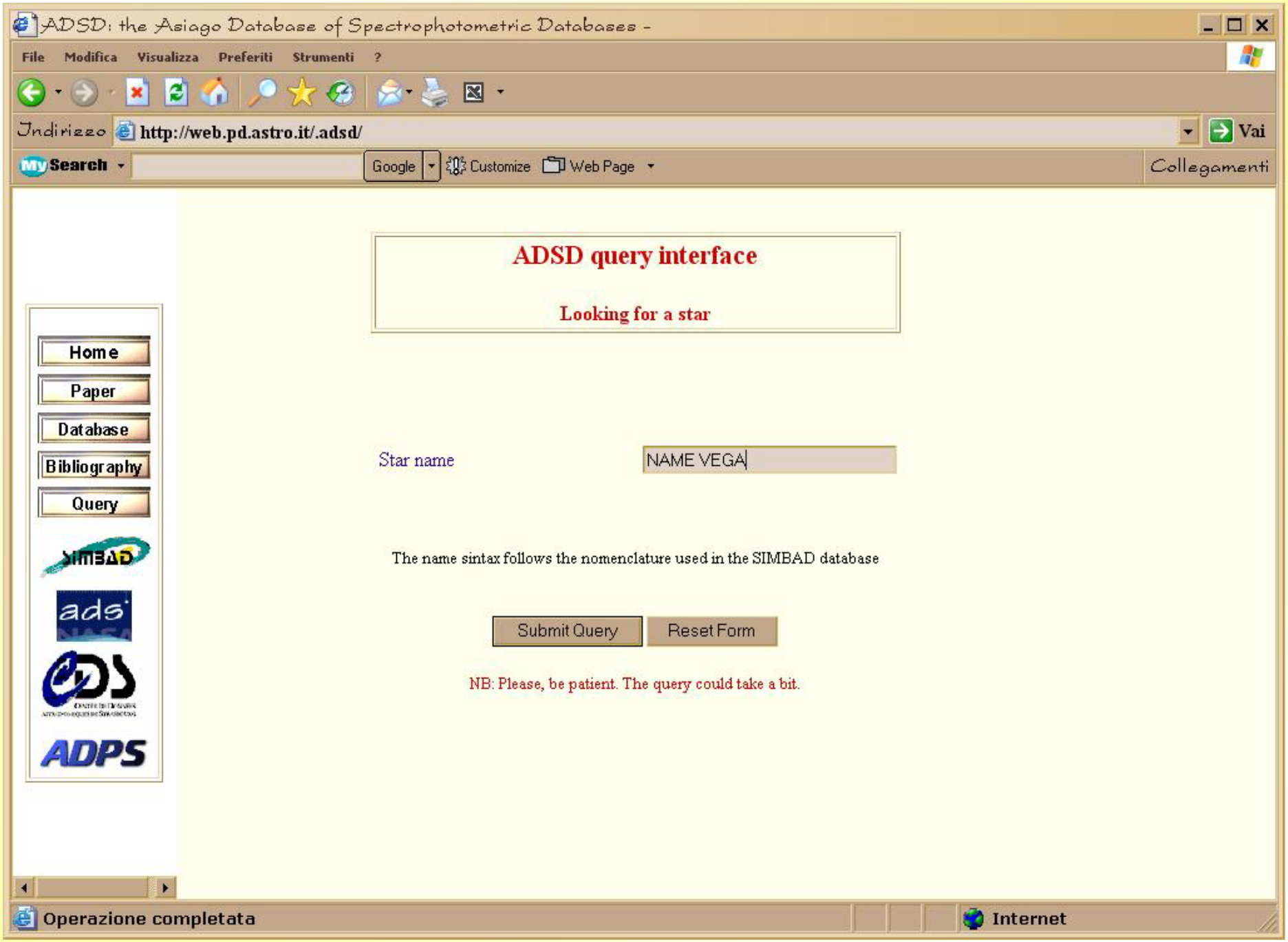
1. find a catalog matching some requirements
2. find a star in a catalog


ADSD: the Asiago Database of Spectrophotometric Databases -
File Modifica Visualizza Preferiti Strumenti ?
Indirizzo http://web.pd.astro.it/.adsd/
Vai
MySearch
Google
Customize
Web Page
Collegamenti
ADSD query
Home
Paper
Database
Bibliography
Query
SIMBAD
ads
ADPS
Two query form interface are available in order
to retrive information from ADSD.
Looking for a star
(i.e. "in which catalogs
can I find HR 214?")
Looking for a catalog
(i.e. "which catalogs include F-stars,
in the UV range at high resolution?")
Internet


ADSD: the Asiago Database of Spectrophotometric Databases -
File Modifica Visualizza Preferiti Strumenti ?
Indirizzo http://web.pd.astro.it/.adsd/
Vai
MySearch
Google
Customize
Web Page
Collegamenti
Home
Paper
Database
Bibliography
Query
SIMBAD
ads
CDS
ADPS
ADSD query interface
What kind of catalog are you looking for?
Spectral Range:*
between
Å
and
Å
Spectral Type:
Luminosity Class:
Data Type:
Absolute Flux
Resolution:
Do you want to include catalogs with mean spectra?
Yes
No
Do you want only spectra continuously sampled?
Yes
No
Do you want only data in electronic form?
Yes
No
Submit Query
Reset Form
Operazione completata
Internet

Catalog(s) matching your query: 12

CATALOG (link for download)	RANGE	R	SP. TYPE	LUM. CL.	Nº stars (matching the query)	
Pickles (1985)	3600-10000	15	O - M6	III - V	1 ms	PS
Biryukov et al. (1998)	3425-7525	50	B8 - K1	III - V	6	PS
Kharitonov et al. (1988)	3225-7575	50	O6 - M5, S, pec	I - V	17	PS
Glushneva et al. (1998b)	3225-7625	50	O6 - M6, pec	I - V	18	PS
Glushneva et al. (1992)	3225-7675	50	O7 - M4, pec	I - V	3	PS
Burnashev et al. (1985)	3200-7350	25	O5 - M7, WR, C, S	I - V	27	PS
Alekseeva et al. (1997)	3200-7500	50	O5 - M4	I - V	10	PS
Fawley (1977)	4000-11000	48	G8 - M89	I	1	PS
Dickens, Penny (1971)	3500-8000	40	A3 - F7	II - V	3	PS
Bohm-Vitense et al. (1977)	3500-8080	40	A4 - F5	IV - V	8	PS
Christensen (1978)	3450-10800	20	MP		1	PS


ADSD: the Asiago Database of Spectrophotometric Databases -
File Modifica Visualizza Preferiti Strumenti ?
Indirizzo http://web.pd.astro.it/.adsd/
Vai
Search
Google
Customize
Web Page
Collegamenti
Home
Paper
Database
Bibliography
Query
SIMBAD
ads
ADPS
ADSD query interface
Looking for a star
Star name
NAME VEGA
The name sintax follows the nomenclature used in the SIMBAD database
Submit Query
Reset Form
NB: Please, be patient. The query could take a bit.
Operazione completata
Internet

NAME VEGA

Home
Paper
Database
Bibliography
Query

IS INCLUDED AS	IN THE CATALOG	
* ALF LYR	Johnson (1978)	PS
* ALF LYR	Bahner (1963)	PS
* ALF LYR	Lockwood (1973)	PS
* ALF LYR	Oke (1964)	PS
* ALF LYR	Taylor (1979)	PS
* ALF LYR	Johnson (1978)	PS
* ALF LYR	Bahner (1963)	PS
* ALF LYR	Lockwood (1973)	PS
* ALF LYR	Oke (1964)	PS
* ALF LYR	Taylor (1979)	PS
HD 172167	Code, Meade (1979)	PS
HD 172167	Cenarro et al. (2001)	PS
HD 172167	Kharitonov et al. (1988)	PS
HD 172167	Munari, Tomasella (1999)	PS
HD 172167	Johnson et al. (1970)	PS
HD 172167	Cohen et al. (1995)	PS
HD 172167	Code, Meade (1979)	PS
HD 172167	Panek (1977)	PS

From Monte Rosa to Padova

Monte Rosa Conference (september 2002)

259 catalogs	41	UV	14 electronic	11 tabular	16 plot
	171	OPT	61	54	56
	47	IR	18	1	28

8th RVS Workshop (june 2004)

285 catalogs	46	UV	16 electronic	12 tabular	18 plot
	187	OPT	81	53	53
	53	IR	24	1	28

Applications to GAIA

Spectroscopy:

- how many catalogs cover the GAIA spectral range, with a resolving power equal or higher than 11500?
- which class of object have been investigated?

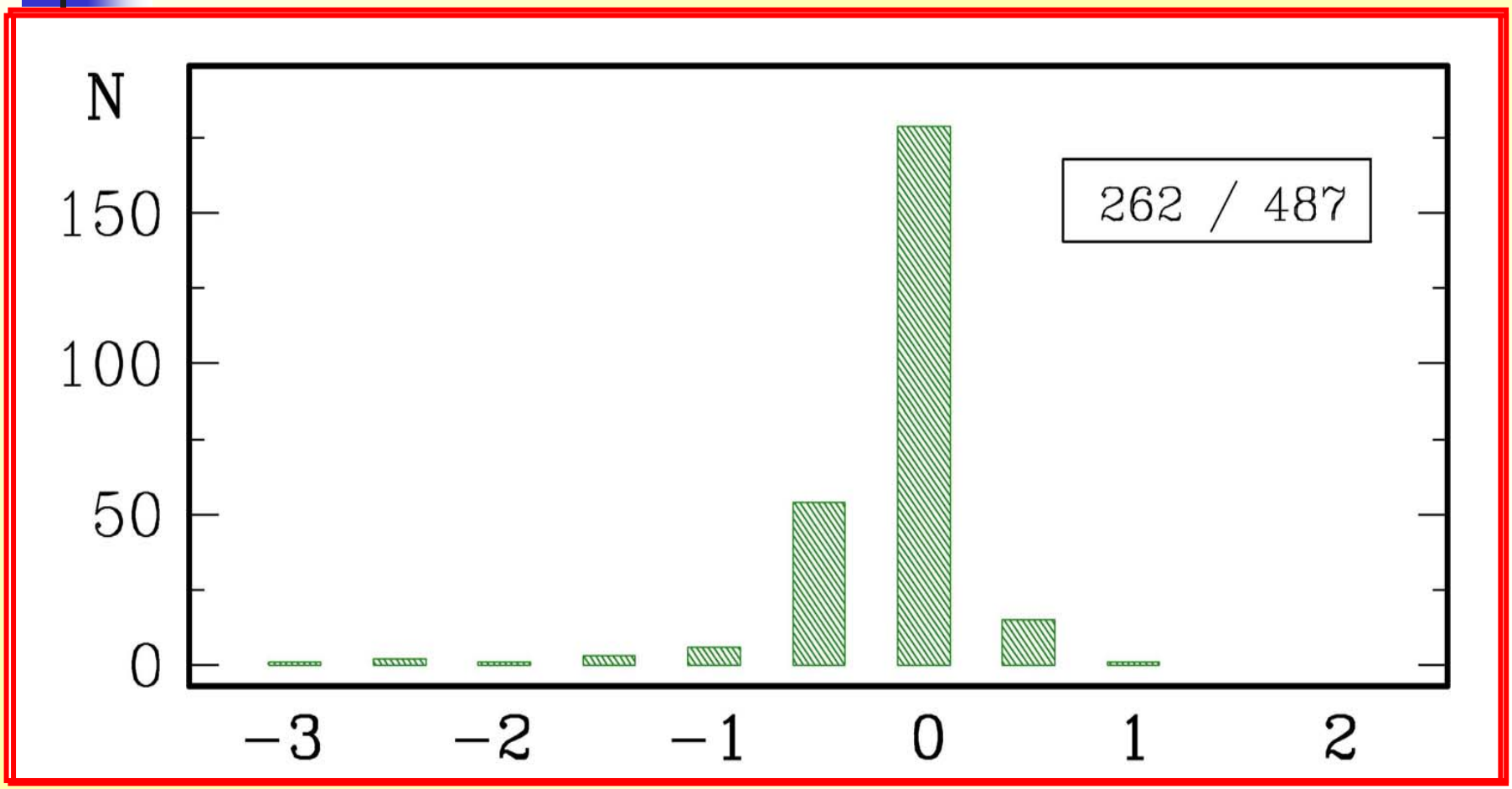
Photometry:

- how many catalogs cover the 3000-10000 A range?
- which class of objects have been investigated?
- what's the accuracy in the flux calibration?

Spectroscopy: catalogs

catalogs	Å	Rp	N.	sp.type
Munari &Tomasella (1999)	8490—8740	20000	130	O-M
Allende Prieto+ (2004)	3600—10400	>45000	119	A-M
Marrese et al. (2004)	8490—8740	20000	92	F-M
Munari (2003)	8490—8740	20000	19	pec
Tinney & Reid (1998)	6400—9100	18750	4	M
Montes+ (1999)	3900 … 9000	12000	132	F-M
Montes & Martin (1998)	4800 … 10600	55000	48	F-M

Spectroscopy: statistic



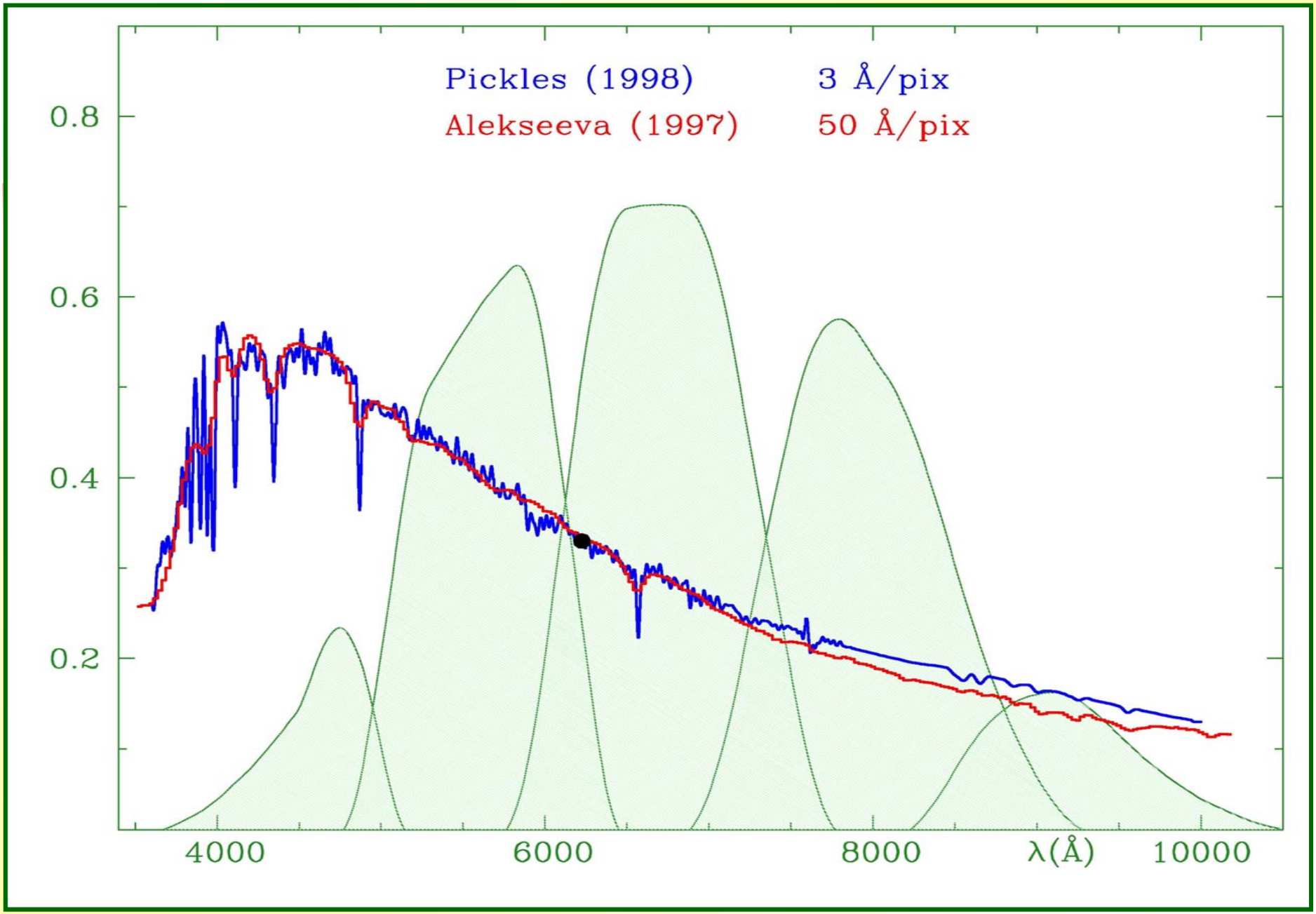
Photometry: catalogs

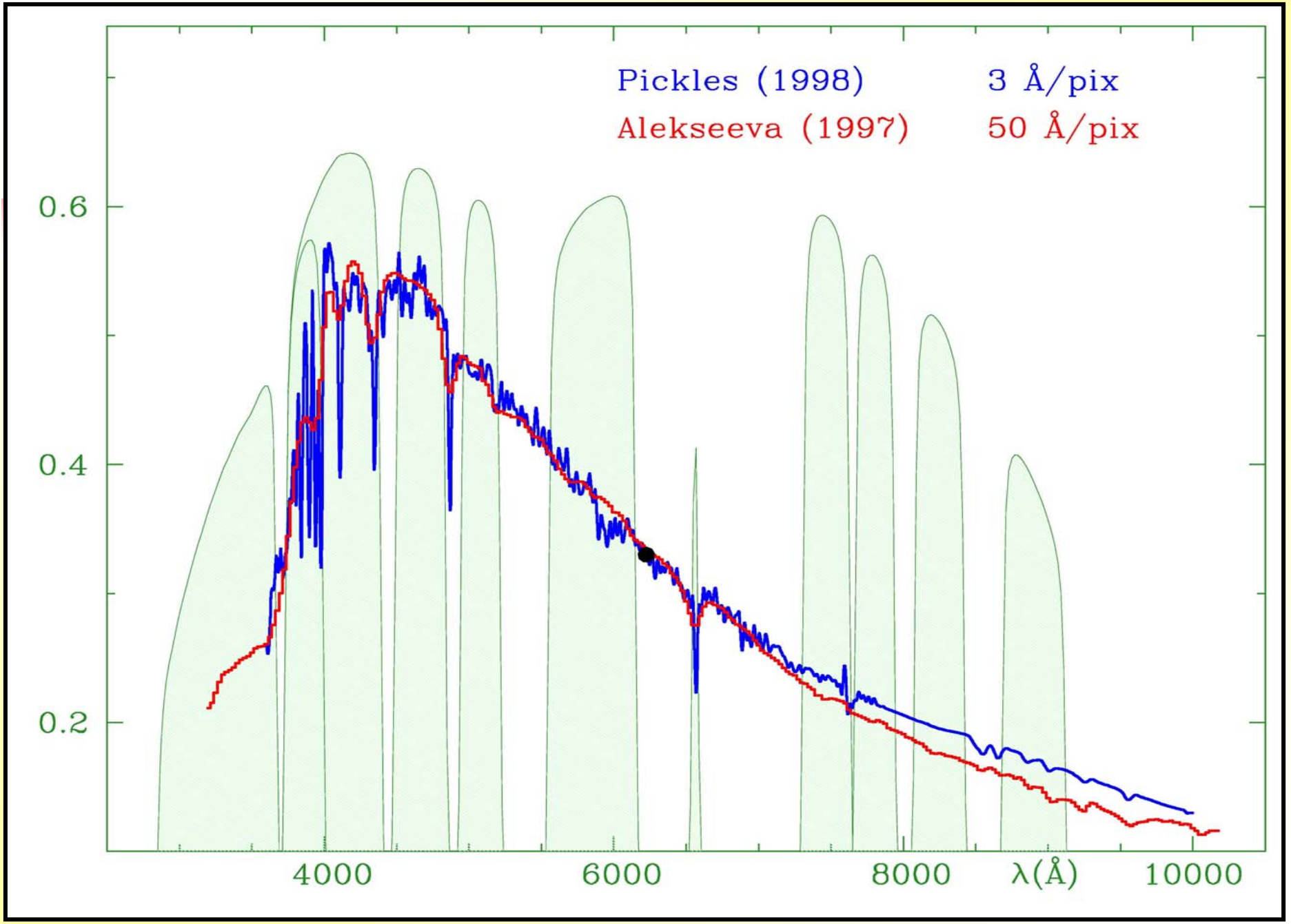
catalogs	Å	R	N.	sp.type
Alekseeva (1997)	3200–10800	100	609	MK, WR
Le Borgne+ (2003)	3200–9500	1.6-4.8	253	MK, WR, WD
Glushneva+ (1998a,b)	3225–10825	50	223	MK, pec
Hamuy (1992, 1994)	3350–10400	16,50	30	MK, WD, pec
Pickles (1985) mean spectra	3600–10000	3,12	48	MK
Fluks (1994) mean spectra	3500–10000	1	22	M
Gunn & Stryker (1983)	3130–10800	20,40	175	MK, C
Pickles (1998) mean spectra	1150–25000	5	131	MK
Santos (2001) mean spectra	3500–10200	3	22	MK
Sviderskiene (1988) mean spectra	1200–10500	50	98	MK
Valdes+ (2003)	3400–9500	1.2	1273	MK,S,C

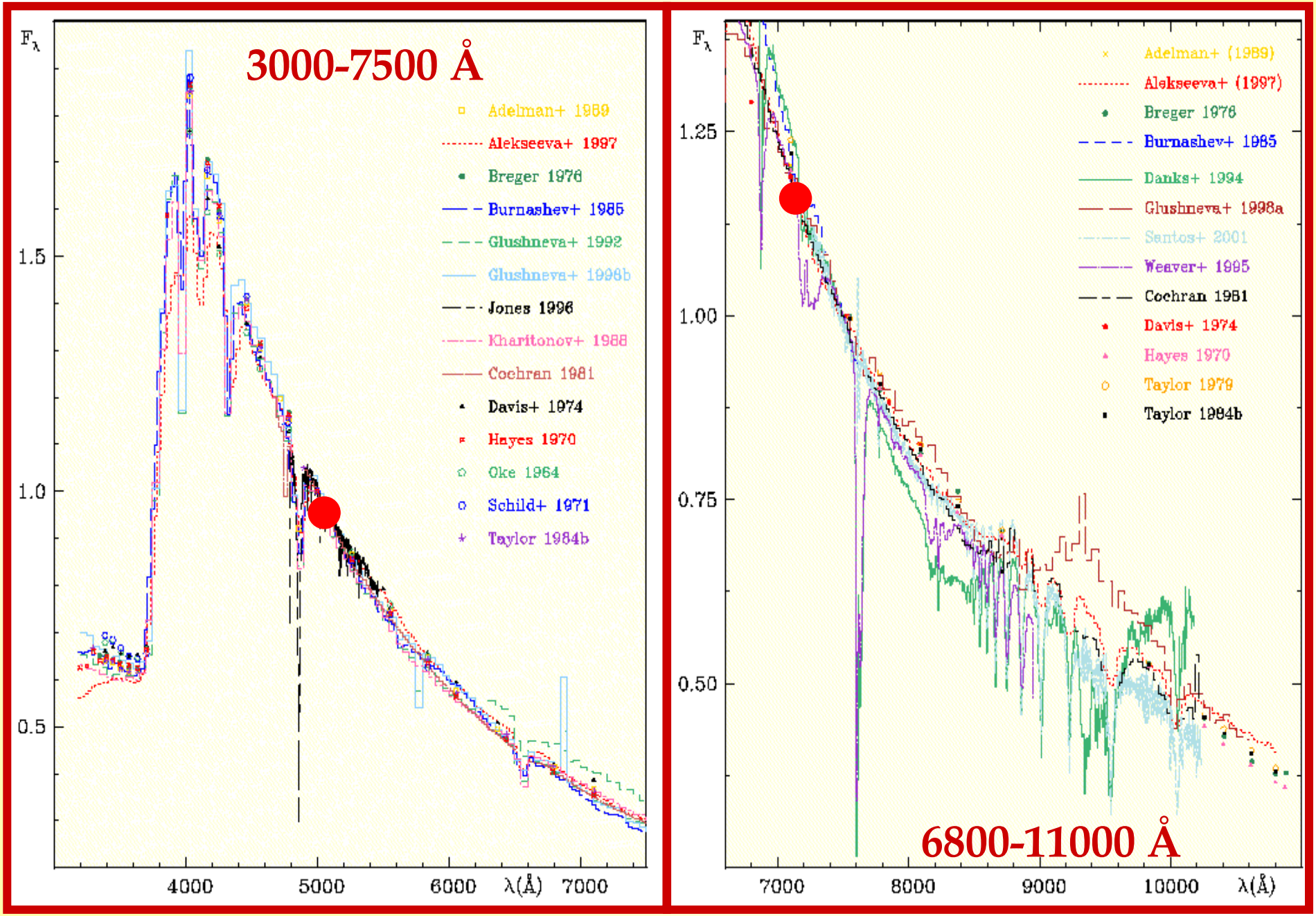
GAIA photometric system

Performances depends on:

- different resolution for different observed catalogs
- uncertainties on the accuracy of the flux calibration (!)


Pickles (1998) 3 Å/pix
Alekseeva (1997) 50 Å/pix
0.8
0.6
0.4
0.2
4000
6000
8000
λ(Å)
10000


Pickles (1998) 3 Å/pix
Alekseeva (1997) 50 Å/pix
0.6
0.4
0.2
4000
6000
8000
λ(Å)
10000


3000-7500 Å
Fλ
1.5
1.0
0.5
4000
5000
6000
λ(Å)
7000
Adelman+ 1989
Alekseeva+ 1997
Breger 1976
Burnashev+ 1985
Glushneva+ 1992
Glushneva+ 1998b
Jones 1996
Kharitonov+ 1988
Cochran 1981
Davis+ 1974
Hayes 1970
Oke 1964
Schild+ 1971
Taylor 1984b
Fλ
1.25
1.00
0.75
0.50
7000
8000
9000
10000
λ(Å)
Adelman+ (1989)
Alekseeva+ (1997)
Breger 1976
Burnashev+ 1985
Danks+ 1994
Glushneva+ 1998a
Santos+ 2001
Weaver+ 1995
Cochran 1981
Davis+ 1974
Hayes 1970
Taylor 1979
Taylor 1984b
6800-11000 Å

ADSD: Part II

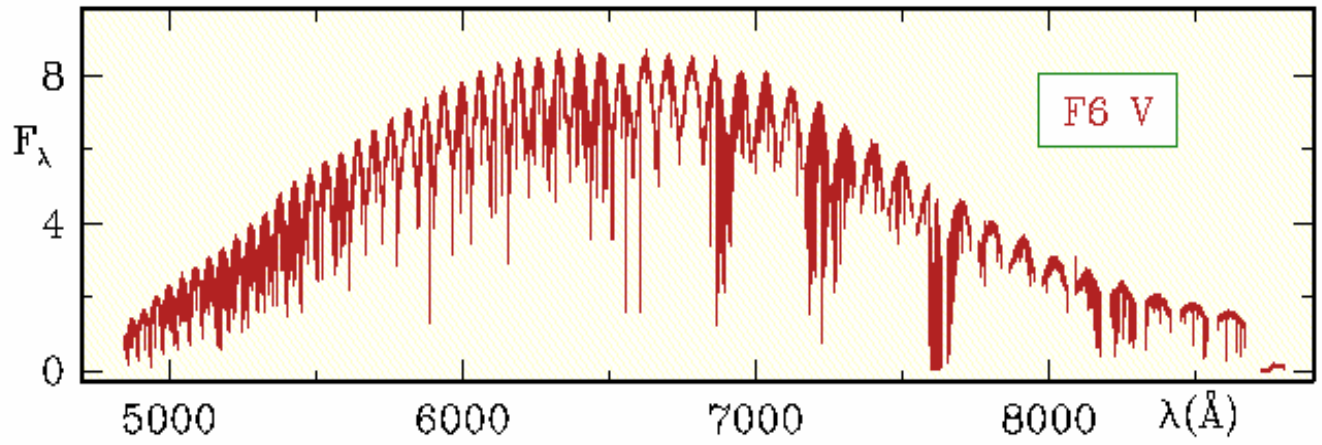
For all catalogs of fluxed spectra:

I. Calculate magnitudes and/or colors in the most used photometric systems (Stromgren, Sloan, Lick, Johnson …)

II. Compare those values with standard calibrations available in literature

III. Give a measure to the quality of the flux calibration

full range



zoomed view