ROTSEIIId Değişen Yıldız Kataloğu

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ATASAM

Atatürk Üniversitesi
Astrofizik Araştırma ve Uygulama Merkezi
Müdürlüğü

DAG

Doğu Anadolu Gözlemevi projesi

ROTSE IIId

ROTSEIII-d Telescope

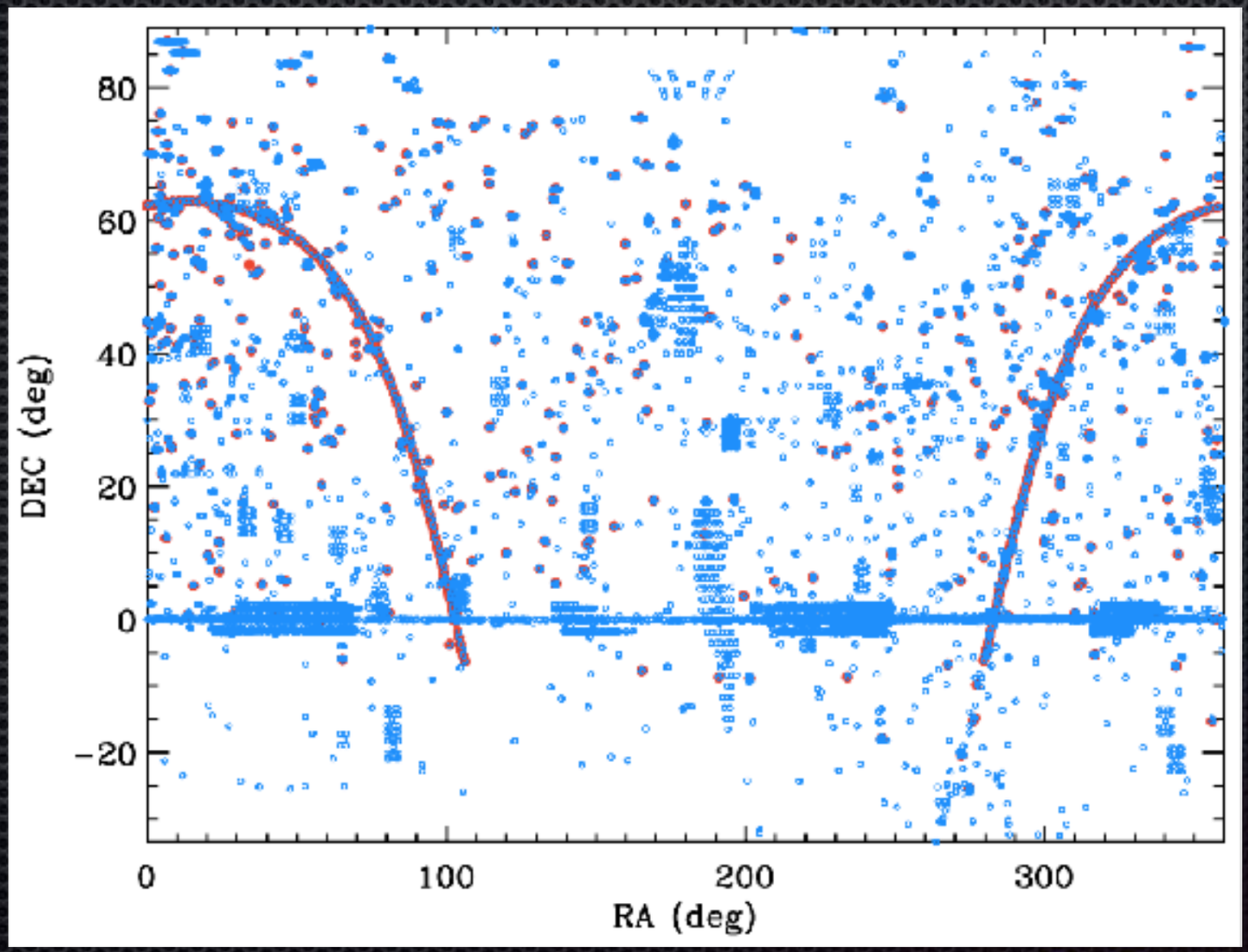
Optical design:	Cassegrain (modified)
Main mirror diameter:	450 mm
Focal length:	850 mm (with field lenses)
Focal ratio:	f/1.8 (main mirror)
Resolving power:	0.31 arcsec
Image scale:	241”/mm
Filter:	—
Dome:	Clamshell type

Time Span : 2004-2010
Disk Space : 2.2TB
FOV : 1.85 degree
Pointing : > 20000 (overlapped)

ROTSEIII-d CCD Camera

Model:	Astronomical Research Cameras,ARC E2V CCD42-40
Sensor:	Marconi CCD42-40 (E2V), BT
Format:	2048x2048 pixels
Pixel size:	13.5 micron
Sensor size:	27.6 x 27.6 mm
Readout noise:	10 e- (1 MHz)
Dark current:	0.06 e-/pixel/sn
Dynamic range:	16-bit
Binning:	1x1, 2x2, 3x3
Exposures:	5, 20, 60 sec. (Default values, changeable)
Cooling:	Liquid, Thermocube 300 chiller
Interface:	ARC 22, f/o Timing Board
Readout time:	6 sec (full frame)
Pixel scale:	0.26 arcsec/pixel
Field of view:	1.85 x 1.85 degree

ROTSE IIId



ROTSE IIId

Güçsav ve ark. 2012;

- Paralel Programlama
- < 10.000.000 Işık Eğrisi
- 16 Çekirdekli Intel® Xeon® E5-2600 - 64 GB RAM ile 2 ay işlem süresi

Sonuçlar:

- ROTSE arşivinde periyodik değişenler arandı.
- UPSILON kodu kullanıldı.
- Bulunan değişenlerden yalnızca ~%10'u SIMBAD'da yer alıyor.

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Astronomy & Astrophysics

A package for the automated classification of periodic variable stars⋆

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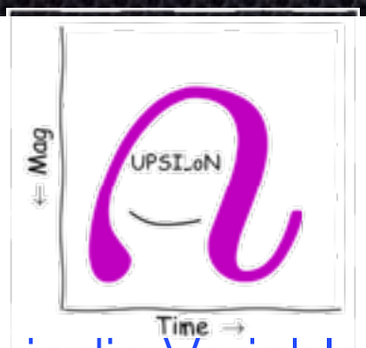

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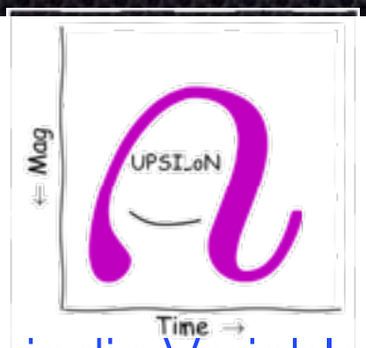

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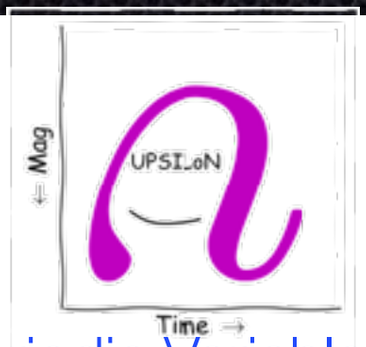

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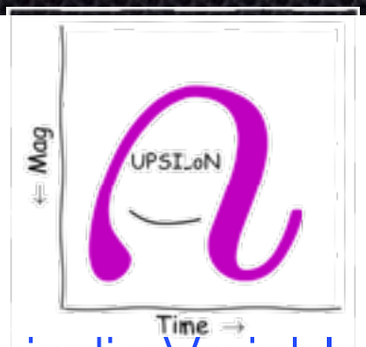

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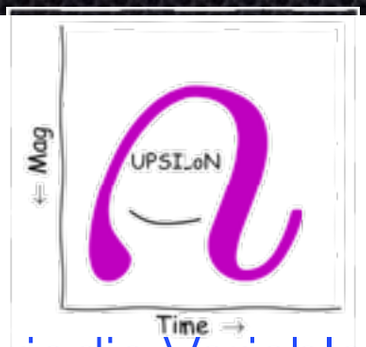

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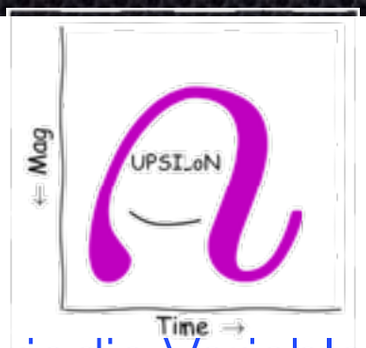

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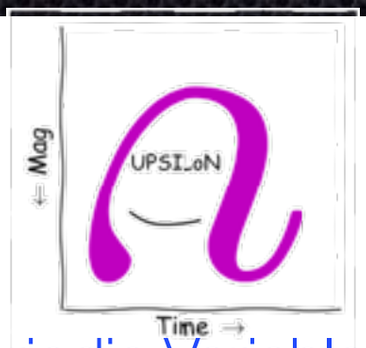

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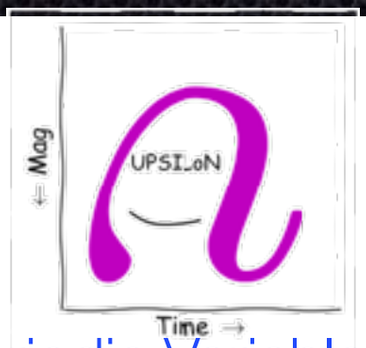

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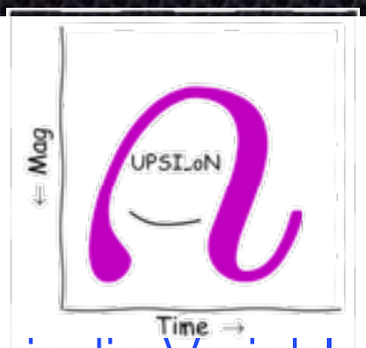

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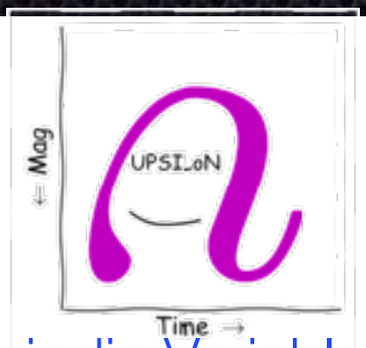

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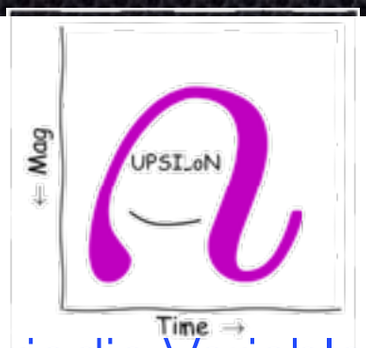
We present a machine learning package for the classification of periodic variable stars. Our package is intended to be general: it can classify any single band optical light curve comprising at least a few tens of observations covering durations from weeks to years with arbitrary time sampling. We use light curves of periodic variable stars taken from OGLE and EROS-2 to train the model. To make our classifier relatively survey-independent, it is trained on 16 features extracted from the light curves (e.g., period, skewness, Fourier amplitude ratio). The model classifies light curves into one of seven superclasses – δ Scuti, RR Lyrae, Cepheid, Type II Cepheid, eclipsing binary, long-period variable, non-variable – as well as subclasses of these, such as ab, c, d, and e types for RR Lyraes. When trained to give only superclasses, our model achieves 0.98 for both recall and precision as measured on an independent validation dataset (on a scale of 0 to 1). When trained to give subclasses, it achieves 0.81 for both recall and precision. The majority of misclassifications of the subclass model is caused by confusion within a superclass rather than between superclasses. To assess classification performance of the subclass model, we applied it to the MACHO, LINEAR, and ASAS periodic variables, which gave recall/precision of 0.92/0.98, 0.89/0.96, and 0.84/0.88, respectively. We also applied the subclass model to HIPPARCOS periodic variable stars of many other variability types that do not exist in our training set, in order to examine how much those types degrade the classification performance of our target classes. In addition, we investigate how the performance varies with the number of data points and duration of observations. We find that recall and precision do not vary significantly if there are more than 80 data points and the duration is more than a few weeks.

Key words. methods: data analysis – methods: statistical – stars: variables: general – techniques: miscellaneous

A&A 587, A18 (2016)
DOI: 10.1051/0004-6361/201527188



Astronomy & Astrophysics

(aUtomated Classification of Periodic Variable Stars using MachIne LearNing)

A package for the automated classification of periodic variable stars*

Dae-Won Kim** and Coryn A. L. Bailer-Jones

Max-Planck Institute for Astronomy, Königstuhl 17, 69117 Heidelberg, Germany

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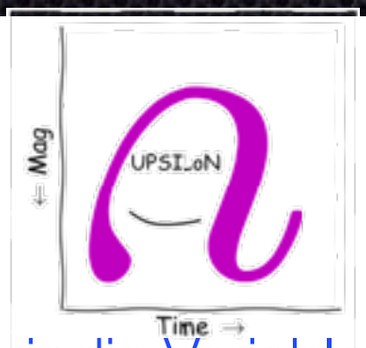

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Işık Eğrisi

Periyodik Değişen Adayı

4.661.117

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Işık Eğrisi

403.455

Periyodik Değişen Adayı

Sağlama

- Simbad
- OGLE
- GCVS
- Periodic LINEAR Variables (PLV)
- AAVSO The International Variable Star Index (VSX)
- The Catalina Surveys Periodic Variable Star Catalog

SIMBAD 225019

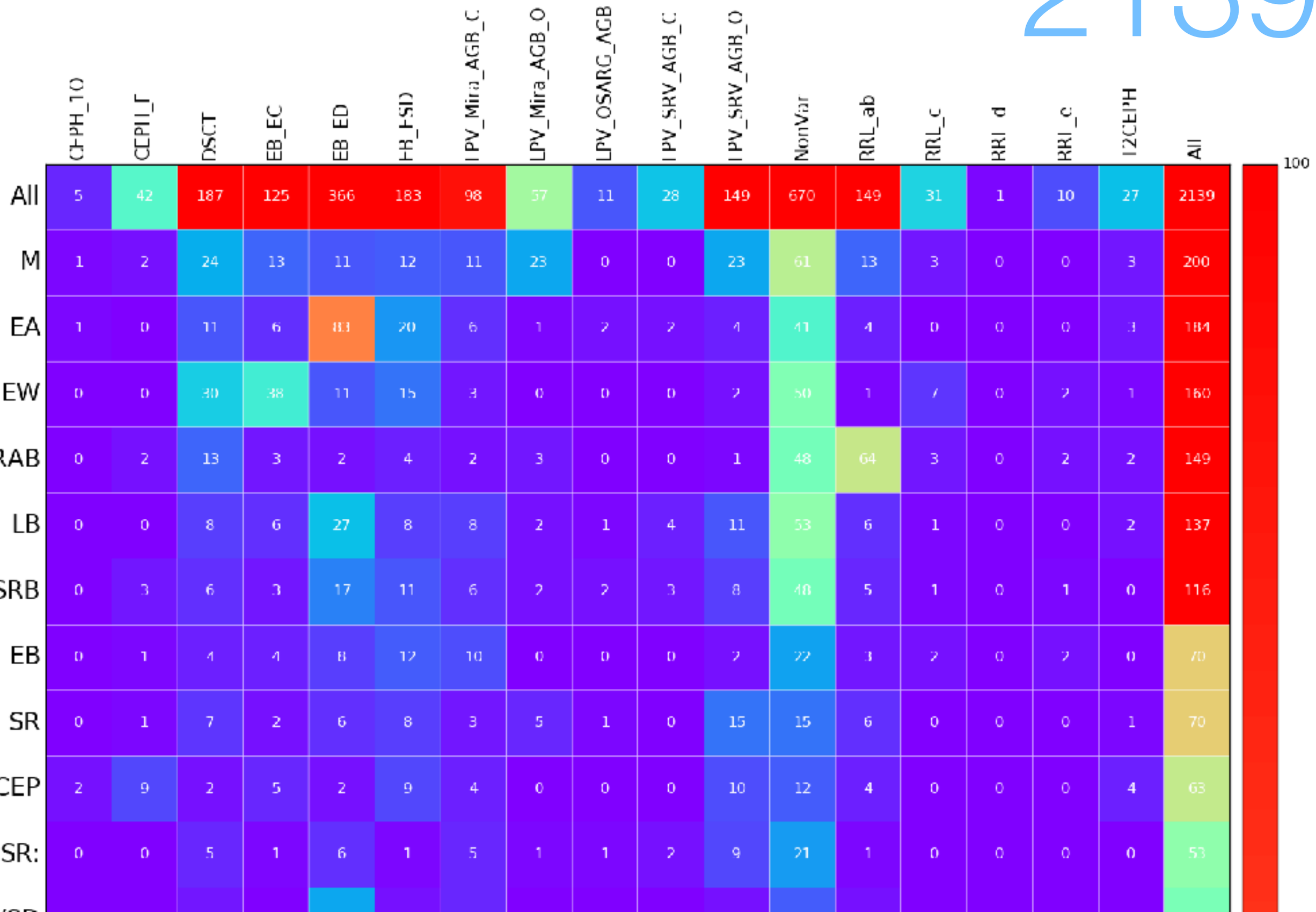
	CEPH_1O	CEPH_F	CEPII_Other	DSCT	FR FC	LB LD	FR_FSD	LPV Mira AGB C	LPV_Mira_AGB_O	LPV OSARG AGB	LPV_OSARG_RGB	LPV_SRV_AGB_C	LPV_SRV_AGB_O	NonVar	RRL_ab	RRL c	RRL d	RRI c	T2CEPH	All
All	260	2487	170	15555	4972	58197	11978	5597	1355	1078	610	3993	9931	97395	8260	1810	24	199	1152	225018
Star	194	1625	72	9494	3489	45246	9434	3838	939	980	547	2698	5892	59866	3545	786	0	58	851	148893
Galaxy	21	318	55	2420	263	1561	320	261	53	2	1	205	1025	12890	2335	502	9	65	98	22404
PM*	14	89	6	797	221	3510	751	264	126	70	38	207	427	3924	263	72	2	6	46	10833
*inCl	8	117	3	459	270	1710	268	546	36	22	8	394	818	3825	245	41	1	4	28	8803
RGB*	6	42	2	280	123	1446	249	87	25	12	5	92	262	2810	165	34	0	2	30	5672
GinCl	0	22	9	121	67	548	24	48	7	0	1	24	293	2216	391	49	1	8	5	3034
*inAssoc	0	4	2	63	6	546	42	69	14	0	1	84	543	650	30	8	0	1	0	2071
RotV*	0	6	0	154	11	368	72	14	6	1	2	20	29	1294	32	6	1	0	4	2020
EB*WUMa	1	19	1	392	115	114	89	41	8	0	0	1	34	869	72	44	0	23	7	1830
V*	2	15	1	133	26	205	78	28	10	4	1	20	118	669	36	11	0	1	7	1365
YSO	1	9	2	74	9	240	24	17	2	0	0	50	78	589	60	17	0	3	1	1176
RRLyr	1	21	0	88	30	43	31	20	12	0	0	1	29	323	249	68	5	11	7	939
low-mass*	0	6	0	89	3	209	7	11	7	0	0	16	40	497	57	5	0	1	3	896

100

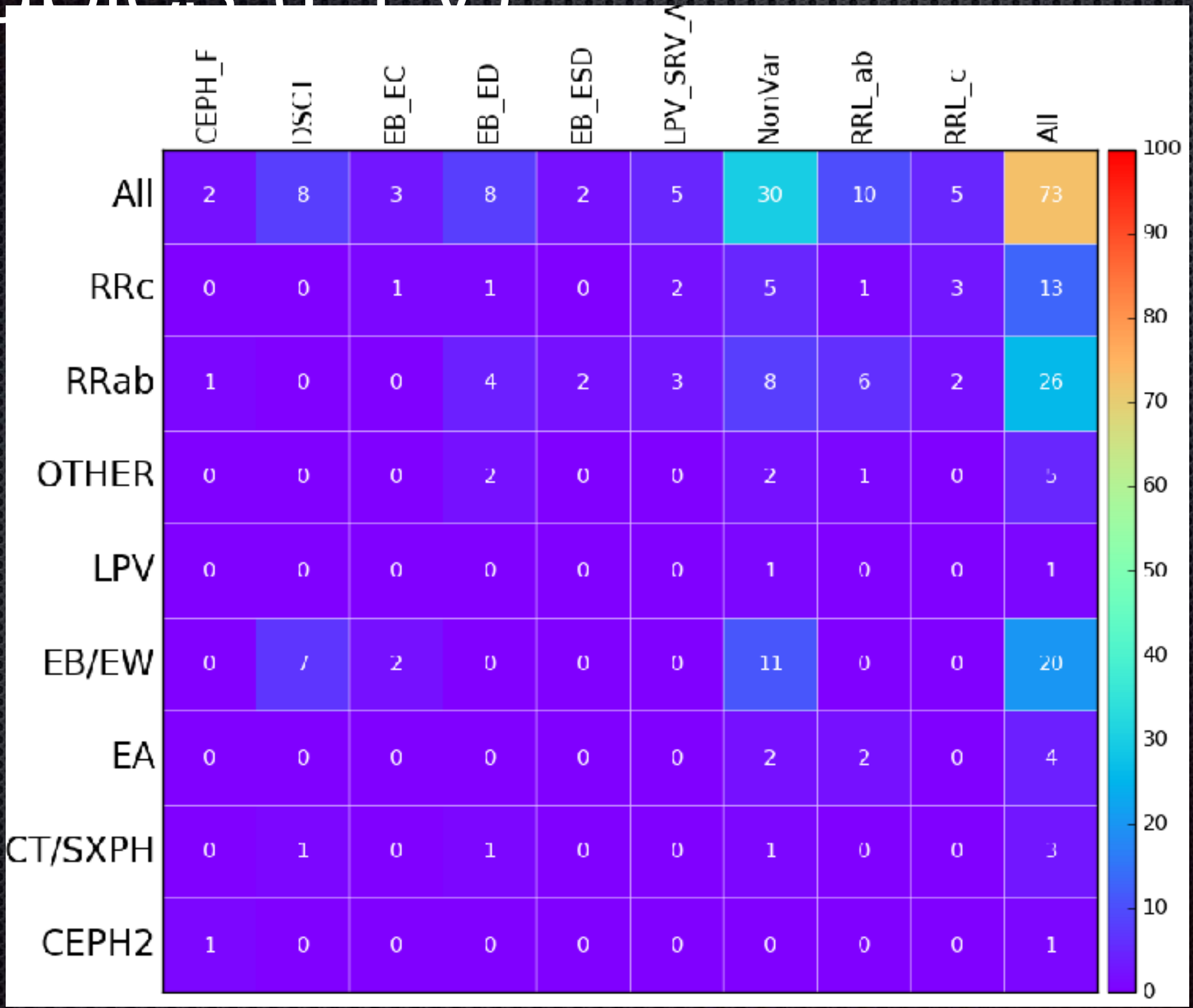
GCVS

51852

2139



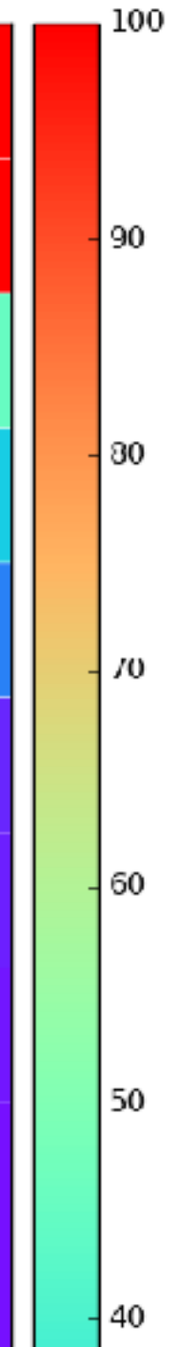
Periodic LINEAR Variables (PLV)



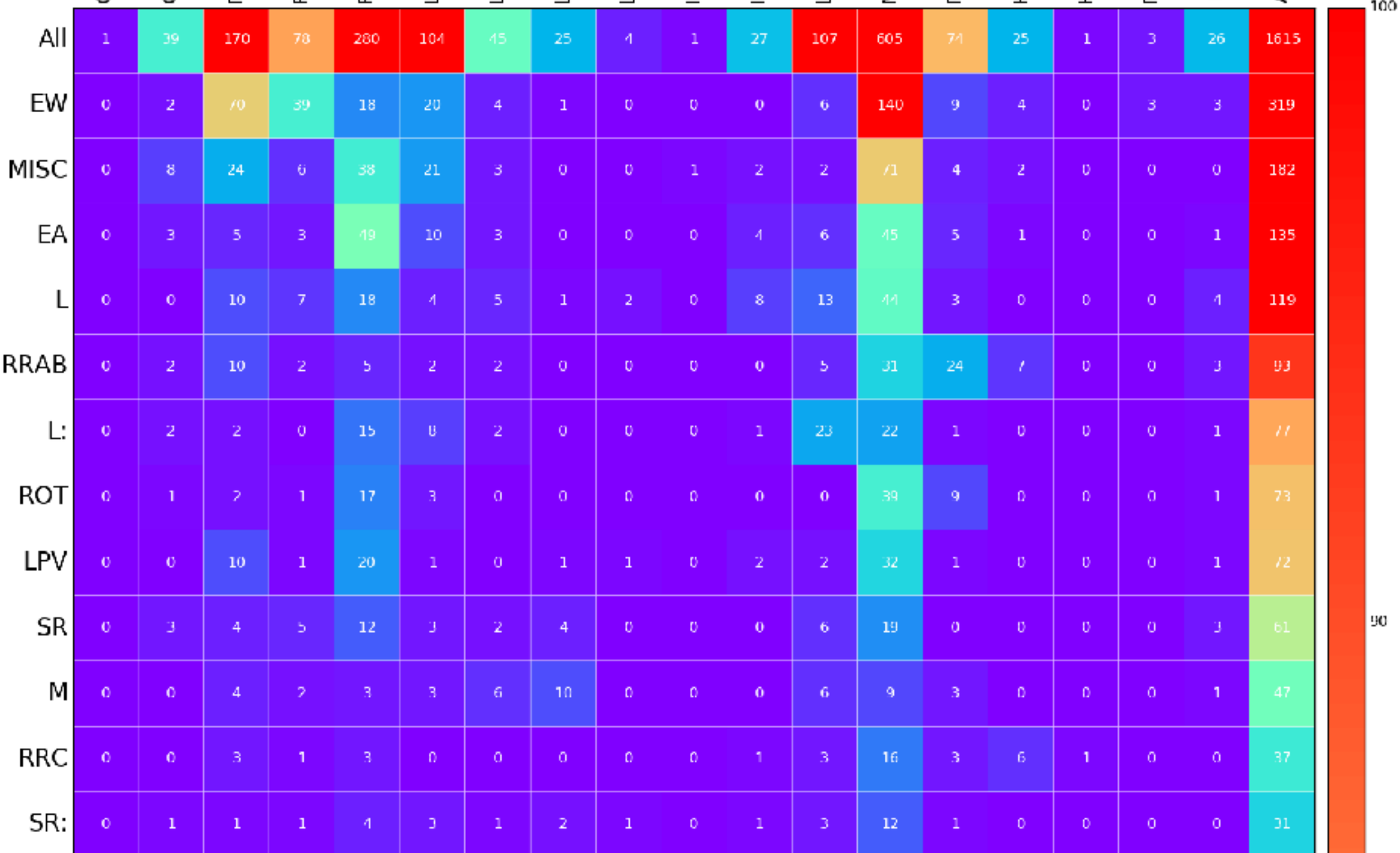
Catalina

360

	CEPH_F	DSCT	EB_EC	EB_ED	EB_ESD	LPV_Mira_AGB_C	LPV_Mira_AGB_O	LPV_SRV_AGB_C	LPV_SRV_AGB_O	NonVar	RRI_ab	RRI_c	RRL_d	RRL_c	T2CEPH	All
All	5	56	26	35	14	7	1	2	7	175	16	12	1	1	2	360
EW	2	48	24	17	12	3	0	0	2	122	9	3	0	1	1	244
EA	1	3	1	7	0	3	0	1	0	23	3	2	0	0	1	45
RRc	0	2	1	2	0	0	0	1	2	13	1	7	1	0	0	30
RS CVn	1	0	0	5	1	0	0	0	2	8	0	0	0	0	0	17
LPV	0	0	0	0	0	1	1	0	0	2	1	0	0	0	0	5
RRab	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	4
beta	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	3
RRd	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
EA_UP	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2



ASAS-VSX 1615



Sunum bitiminde... :)

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- Herbir UPSILON türü için literatürde bilinen kaynaklar toparlanıp, kataloglar oluşturacak, ve bu kataloglar sağlama için kullanılacak.