PVInfo: A simple and remarkably useful tool for the ALS

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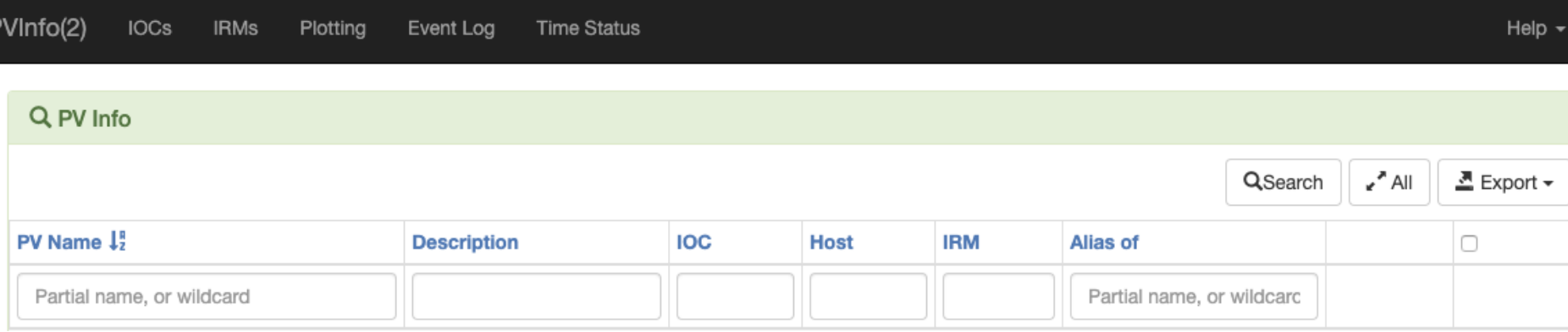
ALS ADVANCED LIGHT SOURCE



- https://controls.als.lbl.gov/pvinfo2
- PHP/MySQL using the Yii2 framework
- Search for PVs by name, IOC, etc.
- Monitor real-time values
- Possibly the most-used application in the control room
- Could be easily adapted to other sites

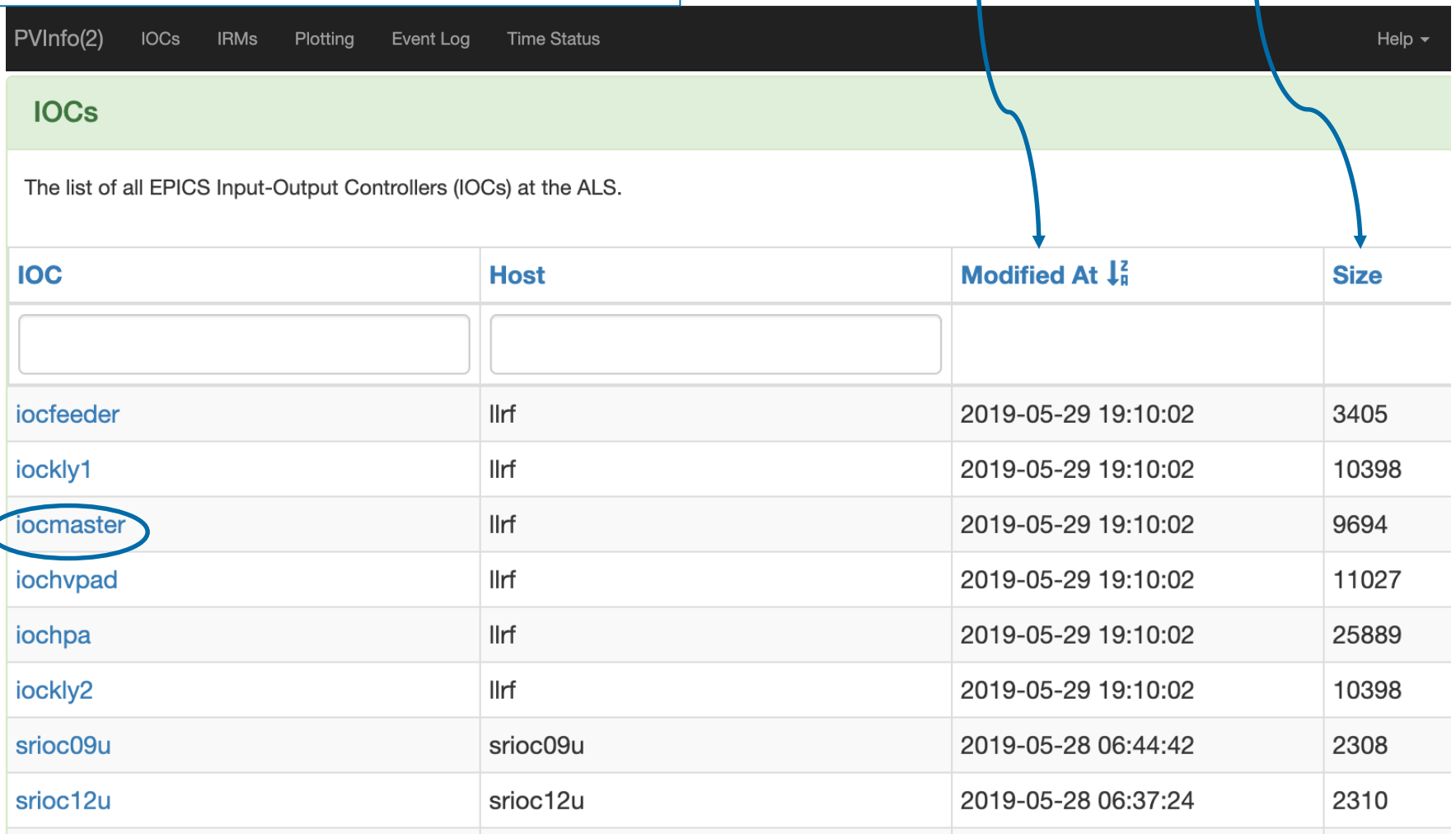
PVInfo Under the covers

- IOCs write output of epicsEnvShow to a common directory
- cron job reads these files to discover env. variables, find startup decks
- cron job then parses the startup decks to find PVs, including various fields
- also adds metadata (e.g. hostname, ioc name)
- All this info is saved to a MySQL database for later lookup by pvinfo

All IOCs are listed

Click on an IOC name to list its PVs

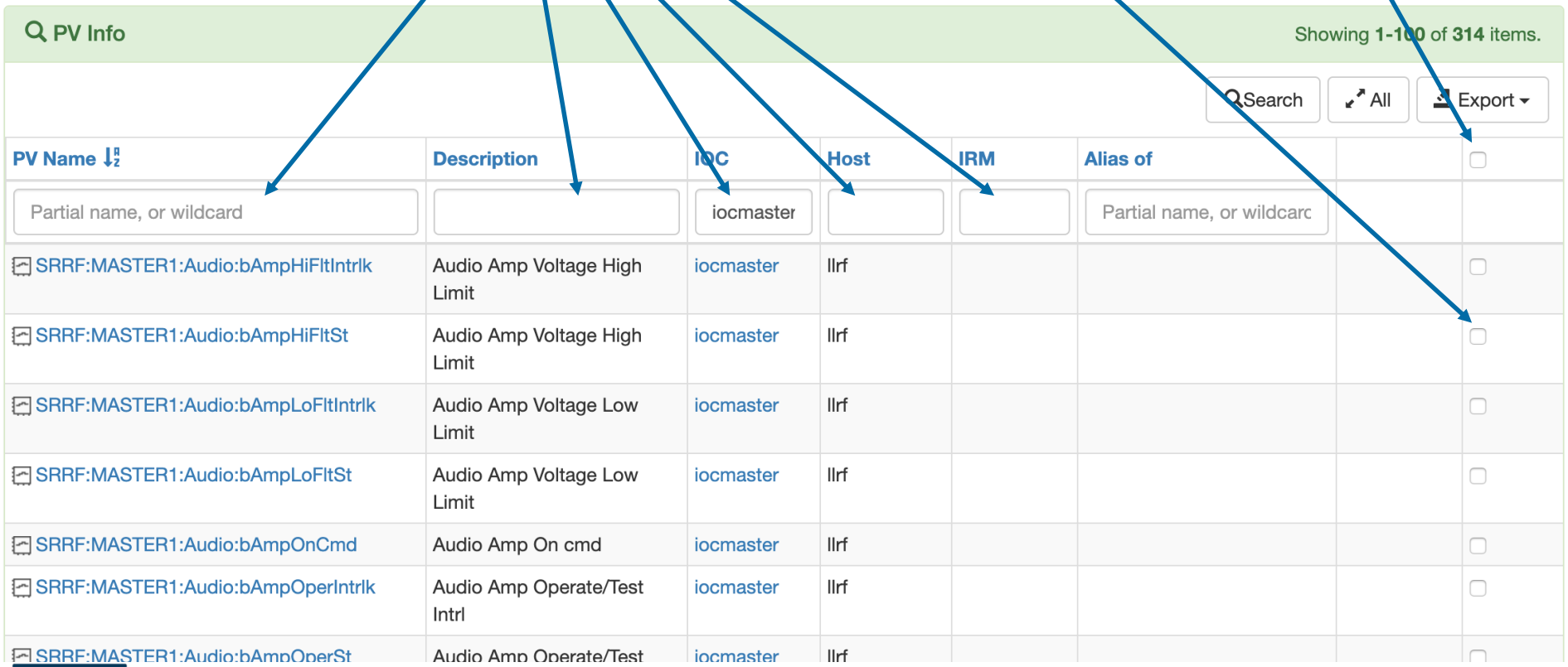
Additional info is available



PV Search page

Search by name, desc, IOC, host, ...

Checkbox allows displaying live values of individual PVs or all at once



Click on a PV name to see details

Monitor live values

cmm:beam_current

..or plot this pv

☐ Monitor live values Plot this pv

Name	cmm:beam_current
Descr	Adjusted beam current
Aliasof	
Host	sioc02
IOC	beam
Rec Type	calc
Dtyp	
VAL	489.86513061523
STAT	NO_ALARM
SEVR	NO_ALARM
CALC	(A-F)*C

ALS OnLine Log

DateTime	Category	Level	Subject	From
2019-Mar-27 15:22	Accelerator Controls, Operations	Info	**Adjusted SR08 PCT pot to zero beam current channel.** With production lattice loaded and no beam in the machine, adjusted pot screw on SR08 PCT chassis to zero cmm:beam_current. The other PV which is displayed as "New DCCT" on Hiroshi's apps says ~8.5 mA (I think this is SR05W___DCCT2__AM01, but why that is mapped to the SR08 DCCT system I have no idea). I also have no idea where the 8.5mA offset comes from. We would all like to understand this very confusing DCCT situation.	tom_scarvie
Accelerator				

Monitoring Live Values

cmm:beam_current

☑ Monitor live values Plot this pv

Name	cmm:beam_current
Descr	Adjusted beam current
Aliasof	
Host	sioc02
IOC	beam
Rec Type	calc
Dtyp	
VAL	**493.83623046875**
STAT	**NO_ALARM**
SEVR	**NO_ALARM**
CALC	**(A-F)*C**

ALS OnLine Log

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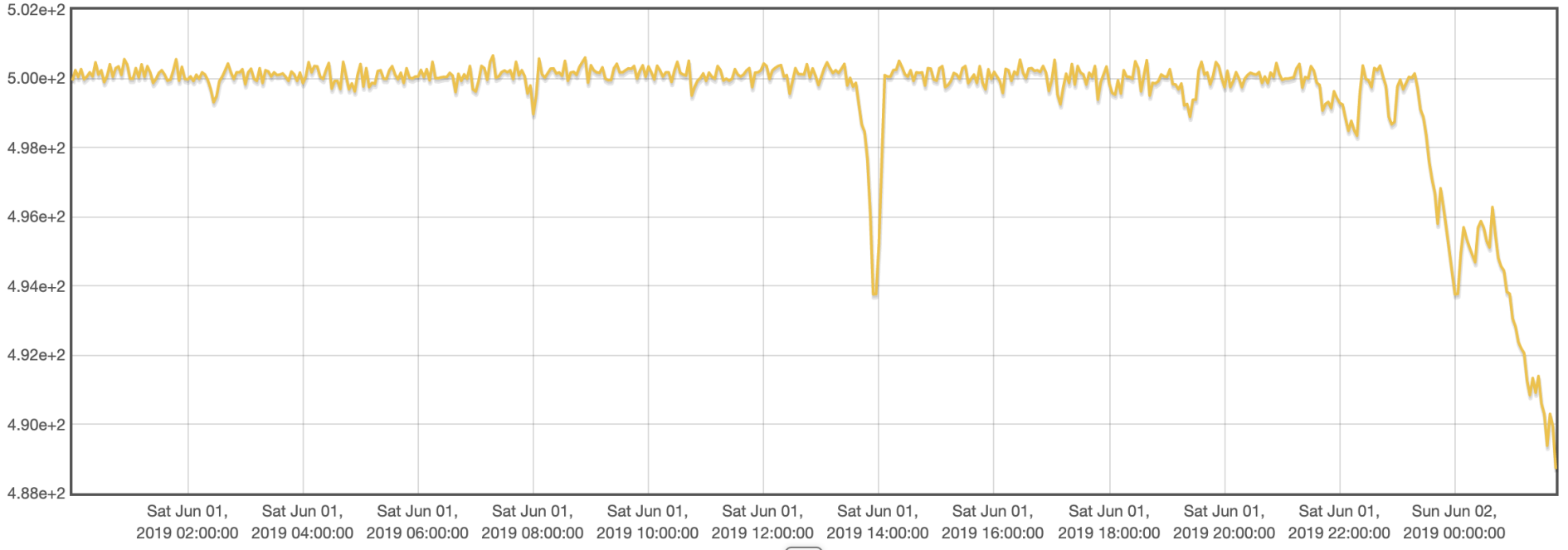
Plotting



All Channels: Show Hide

cmm:beam_current
Adjusted beam current

Search for PVs:

RegEx

– ^cmm:beam_current$ +

Incl. Defaults

OFF

Decimate

OFF

 # Samples

800

Date Range

2019-06-01 to 2019-06-02

Find Names | Generate Plot | Export as Text

Event Log

- Discrete PV values are recorded via CA monitors
- Users can search by regexp, time/date range
- Eases investigation of root causes of beam dumps
- Flexible search interface for many troubleshooting tasks

Event Log

Showing **1-21** of **21** items.

Search Terms: Beam Loss @ 2019-05-28 10:40:49 (Investigating) (filtered)

Search | All | Export

Date/Time	msec	Fm	To	Name	Description
2019-05-28 10:40:51	833	1	0	ETI_TOP_OFF_MODE_DBNCB	
2019-05-28 10:40:51	502	1	0	ETI_TOP_OFF_MODE_DBNCA	
2019-05-28 10:40:49	930	0	1	SRRF:KLY2:MaCtl:bFwdPwrLow	
2019-05-28 10:40:49	930	1	0	SRRF:KLY2:MaCtl:bFwdPwrHigh	
2019-05-28 10:40:49	570	1	0	SRRF:HPA1:Network:biCmodArcOk	
2019-05-28 10:40:49	570	1	0	SRRF:HPA1:Network:biRfPowerPermit	
2019-05-28 10:40:49	546	1	0	SRRF:HPA1:Global:boK2DrvCntCmd	
2019-05-28 10:40:49	546	1	0	SRRF:HPA1:Global:biPssK2ChBCxSW	
2019-05-28 10:40:49	546	1	0	SRRF:HPA1:Global:biPssK2ChACxSW	
2019-05-28 10:40:49	541	1	0	SRRF:HPA1:Global:bPSSSum	
2019-05-28 10:40:49	541	1	0	SRRF:HPA1:Global:bK2PermitRF	
2019-05-28 10:40:49	541	1	0	SRRF:HPA1:Global:bCmnIntrlk	
2019-05-28 10:40:49	495	1	0	SRBeam_Beam_I_IntrlkB	
2019-05-28 10:40:49	491	1	0	sr:user_beam	User Beam Available
2019-05-28 10:40:49	251	1	0	SRRF:KLY2:Global:bStateX	
2019-05-28 10:40:49	251	0	1	SRRF:KLY2:Global:bStateH	
2019-05-28 10:40:49	235	1	0	SRBeam_Beam_I_IntrlkA	
2019-05-28 10:40:49	053	1	0	SRRF:KLY1:State:biXMTIOC	
2019-05-28 10:40:48	947	1	0	SRRF:KLY2:State:biXMTIOC	
2019-05-28 10:40:48	594	0	1	sr08u1:Vgap_mtr_done	
2019-05-28 10:40:48	594	1	0	sr08u1:Vgap_mtr_done	

Conclusion

- PVInfo is a relatively simple tool
- Has proven to be incredibly useful
  - Go-to tool for operators, physicists, engineers, etc.
- Does have some flaws
  - PHP/MySQL – rewrite?
  - Plotting interface is a little clunky