

# TOFp, pVPD, & TOFr in Run-3

star operations critique meeting  
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## Plans for run-3 from Run-2 Critique Mtg....

- Integrate TOFr into TOFp Systems done  
new tray, significant signal cabling  
requires separate gas system containing a flammable gas
- TOFp “Standard Maintenance” done  
FEE and Cell repair
- Improve shift crew interface done  
Evolve towards one operations GUI
- Improve online monitoring plots done
- pVPD shield improvements? unnecessary
- Improve input to Fast Offline? back burner

### ...Plus

- Recommission TRG interface for new TCDs done  
required custom PECL→TTL translator...  
required TCD reprogramming to “hold levels” until next word...
- Verify SGIS interlocks of rack power done
- Auto-reramp functionality in TOFr HV control code done
- Continuous TOFr gas mixture monitoring/alarms done
- STAR Level-0 trigger based on TOFr & pVPD done

# Integration of TOFr into TOFp Systems....

system up & running on day ~23

~9M total pVPD physics evts

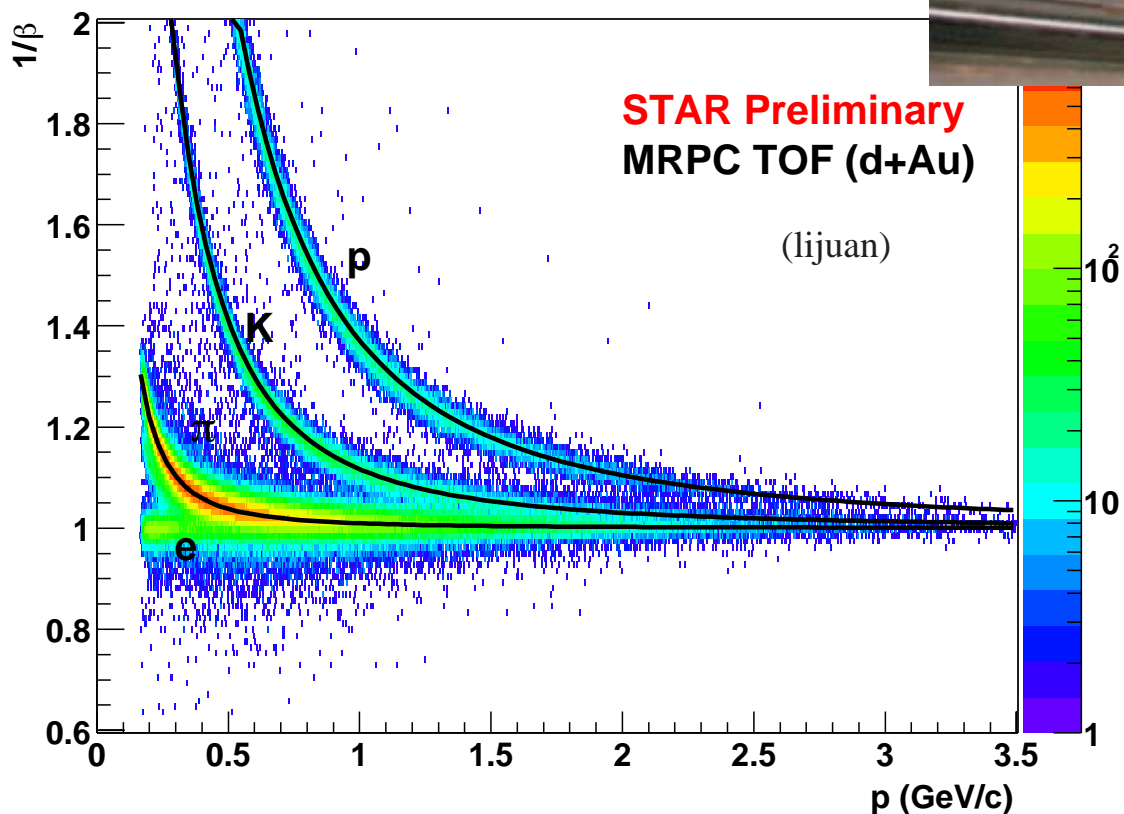
~500k total matched primaries to TOFp

~600k total matched primaries to TOFr

significant TOFr data sets with

100% freon

95% freon + 5% isobutane



expect physics from both trays...

...very successful run for us

...our deepest thanks to the  
shift leaders & crews,  
STSG, RTS, TRG, DAQ

# TOFp systems fully under star slow controls during run-3... (frank)

The Alarm Handler window displays a hierarchical tree of system components. The components are organized into groups, with checkboxes and status indicators for each. The components listed are:

- STAR (Group)
- DISABLE-ALARMS (Group)
- VME (Group)
- RHIC (Group)
- TPC (Group)
- ENVIRONMENT (Group)
- MAGNET (Group)
- SILICON-VERTEX-TRACKER (Group)
- INTERLOCK (Group)
- TRIGGER (Group)
- BEMC (Group)
- EEMC (Group)
- FTPC (Group)
- PMD (Group)
- TOF (Group)
- pVPD (Group)
- TOFpHV (Group)
- TOFrHV (Group)
- TOFrGAS (Group)

At the bottom of the window, there is a status bar with the following information:

```
Mask <CDATL>: (Cancel,Disable,noAck,noackT,noLog)
Group Alarm Counts: (INVALID,MAJOR,MINOR,NOALARM)
Channel Alarm Data: Current(Status,Severity),Highest Unack(Status,Severity)
Filename: TPCAlm.alhConfig
```

pVPD HV

TOFp HV

TOFr HV


TOFr Gas Monitor

The TOF Systems.adl window displays a menu titled "Time Of Flight" with the following options:

- TOFp Monitor
- TOFp Configuration
- TOFr HV Monitor
- TOFr Gas Monitor
- pVPD Monitor

TOFrGAS.adl

# TOFr GAS SETTINGS




Last unix time stamp  
**1045851180**

Freon Flow <b>61.90</b>	Isobutane Flow <b>0.15</b>	SF6 Flow <b>0.15</b>	Isobutane Ratio <b>0.04</b>	SF6 Ratio <b>0.04</b>
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TOFpHV.adl

# TOFp HIGH VOLTAGE SETTINGS



Last unix time stamp  
**FRI APR 11 10:18:43 2003**

Voltage Branch 0 <b>199.60</b>	Voltage Branch 1 <b>3.20</b>	Voltage Branch 2 <b>3.00</b>	Voltage Branch 3 <b>3.00</b>
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TOFrHV.adl

# TOFr HIGH VOLTAGE SETTINGS



Last unix time stamp  
**FRI APR 11 12:03:00 2003**

High Voltage A- Read <b>6992</b>	High Voltage A- Set <b>7000</b>	High Voltage A- Iread <b>0</b>	High Voltage A- Imax <b>16000</b>
High Voltage A+ Read <b>6998</b>	High Voltage A+ Set <b>7000</b>	High Voltage A+ Iread <b>0</b>	High Voltage A+ Imax <b>16000</b>
High Voltage B- Read <b>6994</b>	High Voltage B- Set <b>7000</b>	High Voltage B- Iread <b>0</b>	High Voltage B- Imax <b>16000</b>
High Voltage B+ Read <b>6994</b>	High Voltage B+ Set <b>7000</b>	High Voltage B+ Iread <b>0</b>	High Voltage B+ Imax <b>16000</b>

BRANCH Number 0

for	Cell ID	HV read	HV set	Error
29	48	1916.64	1934	●
30	12	1525.92	1551	●
31	21	2513.28	1591	●
32	38	2463.12	1573	●
33	13	1636.80	1637	●
34	23	1539.12	1537	●
35	25	1689.60	1704	●
36	26	3030.16	1713	●
37	27	1673.76	1691	●
38	49	1628.88	1650	●
39	24	1716.00	1731	●
40	44	1718.64	1745	●
41	15	1697.52	1700	●

# Operations “Events” during Run-3

“Standard” assortment of failures of cells, discriminators, adc & tdc units, etc...  
standard module-swapping to repair...

handful of yellow alarms in days after SC monitoring interface was deployed...  
typically at very beginning of new spills... TOFr HV trips, then autoramps → alarm  
just took a few attempts to get thresholds right

single red alert on TOFr gas from detected increase in isobutane/freon ratio... (march 19)  
quick response by crew, perfectly according to the TOF SC procedure...  
freon regulator got “stuck” - knob tweaked... did not reoccur.

repeated yellow alarms indicating TOFr HV trips in last ~2wks of run...  
by cable swapping, problem isolated to one of the CAEN A631 HV pods... now under repair

Level-2 Latency problems (early march)...

TOFp local DAQ turns out to be an excellent canary for L-2 latency problems...  
on ~3 occasions, shift crew response was to simply kick out TOF (!!)...  
(sometimes crew contacted us, sometimes they didn't)...  
eventually these L2 problems went away (no action ever taken on our side)...

Trivial TCD Problem

after an access, some cables at TOF TCD front panel moved accidentally (solved quickly)...

TOF TCD problem: TOF went 100% busy after random number of events

began after a detector access...no action on our side during this access  
there was lots of work at TRG racks...

lots of testing on our side all we could figure was a loose cable on TCD side...

problem disappeared after a later access where again lots was happening at the TRG racks...

# Operations Plans for Run-4:

new pVPD Base plate design

to ameliorate space conflict w/ PMD

done (STSG)

TOFr now back at Rice, to be disassembled...

TOFr' now under construction...

→ Integrate TOFr' into TOFp systems

in progress

- no new cabling...

- no new facilities requirements, safety issues, etc....

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TOFp standard maintenance (cell and fee repair)

standard BOR stuff

move TOFp to a different rail?

under discussion

- by one rail so that it is “centered” in Sector 20?

- by many rails to be in front of an EMC module?

(note run-4 will be the last run for TOFp)...

new HV path for pVPD? (higher gain in run-4 p+p)

under discussion

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recommission DAQ & TRG interfaces and L0 trigger

standard BOR stuff

- RH6→RH9 w/ expected kernel issues

- in process of moving all sources to CVS/online

additional refinements to interfaces & procedures

always in progress