PHENIX Plan for 510 GeV pp Run

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PHENIX Run12 BUP

run	species	$\sqrt{s_{NN}}$	weeks	$\int L\,dt$ $\lvert z\rvert < 30$ cm	$\int L\,dt$ $\lvert z\rvert < 10$ cm	pol.	comments
	$p+p$	200	5	13.1 pb^{-1}	4.7 pb^{-1}	60% (T)	HI comparison, $\perp$ spin
	$p+p$	500	8	100 pb^{-1}	35 pb^{-1}	50% (L)	W program + ΔG

If we scale to 5-week running time, we expect to have 30 pb^{-1} for $|z| < 30$cm and 10 pb^{-1} for $|z| < 10$cm.

Local Polarimeter Commissioning

iFill	Pol. Direction	Description
Assuming PHENIX is already timed in, backgrounds under control, etc.		
1	Any	4-5 hours gain matching and producing slewing corrections.
2	Transverse	Calibrate our offline analysis
3	Transverse (start) tune to longitudinal	PHENIX lpol experts will be in CAD to provide feedback
4	Longitudinal	Measure residual transverse polarization (potentially return to CAD for more tuning of spin rotator)

Start asap as long as the beam is stable.

What is needed:
2&4)

- 8 hours of data-taking
- Polarization measurement should be available from Hjet
- Not huge backgrounds, stable beam, etc.

Big drops in polarization over a fill will complicate analysis for steps 2-4

Conditions for Declaring PHYSICS

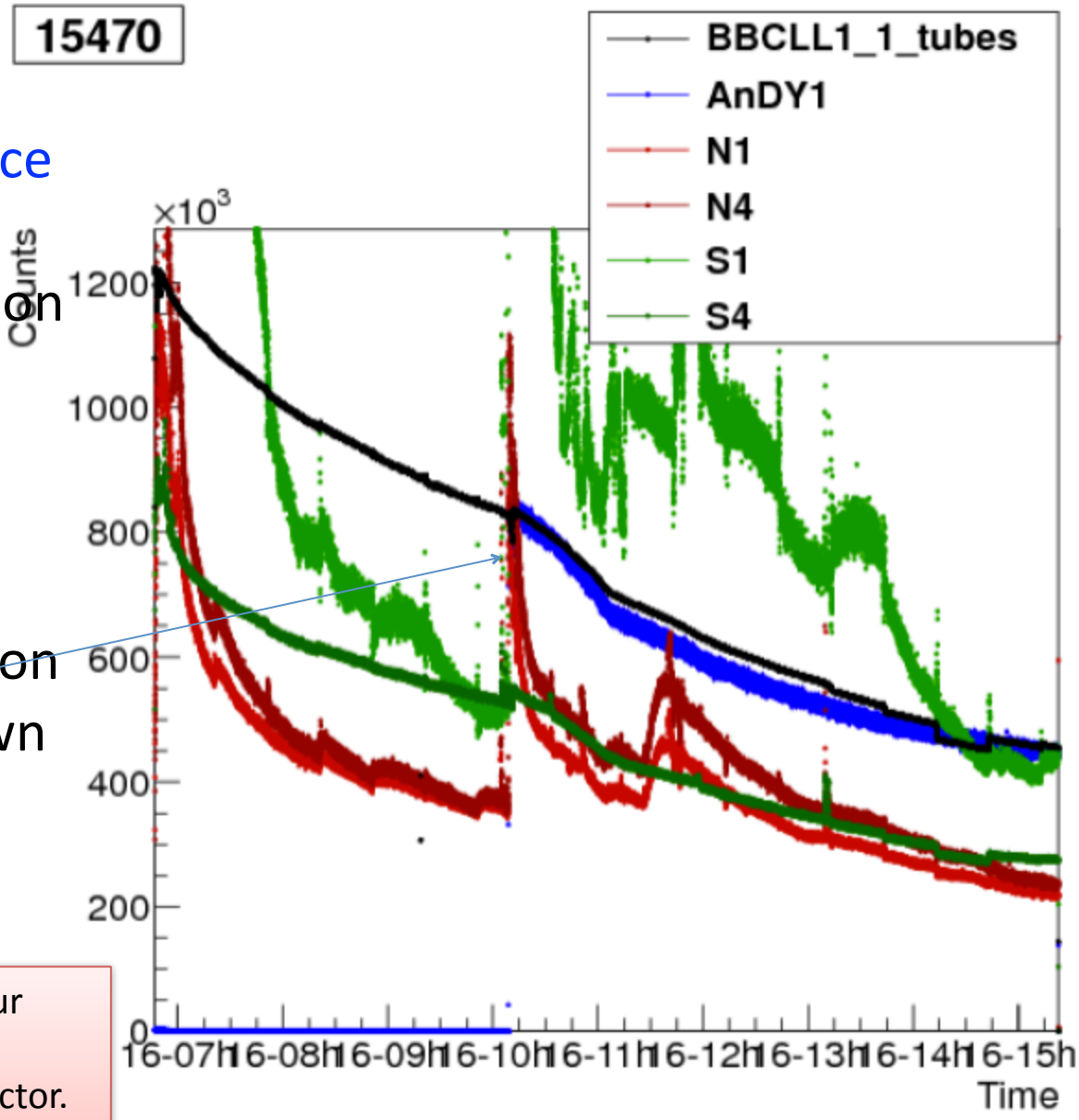
- 3 back-to-back stores without large downtime periods between stores
(average downtime less than 2 hours)
- On track for initial luminosity goals (10 pb^{-1} delivered / week*)
  - Projected delivered luminosity goes up with time.
- Longitudinal beam polarization
- Polarization >48%*
- Collimators and backgrounds under control
  - At the beginning of run11, high backgrounds forced us to leave off the RPC's at the beginning of stores.

* Figures taken from "RHIC Collider Projections (FY 2012 – FY 2016)"

Background Concerns When AnDY is ON

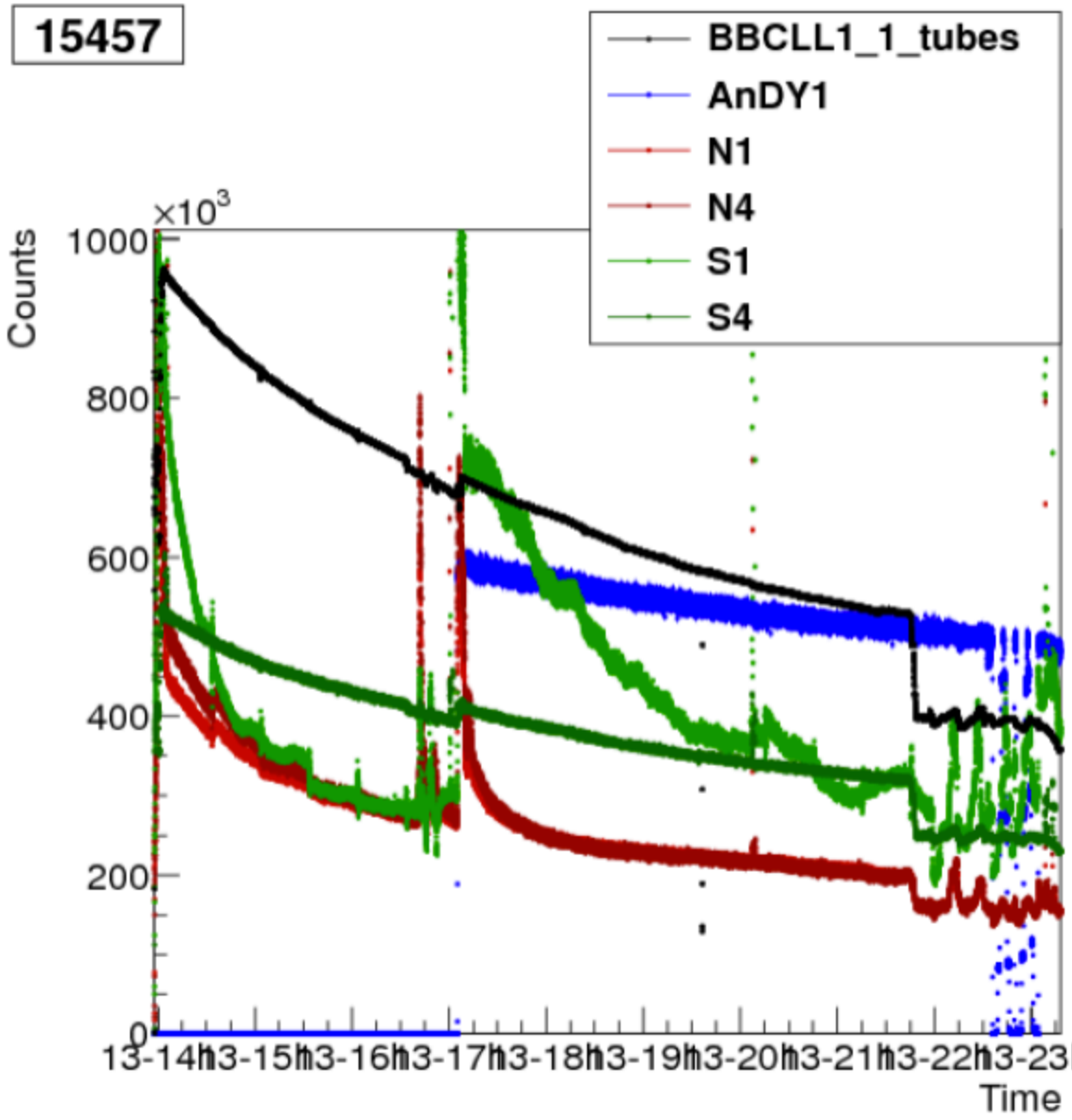
- PHENIX BBC Rate
- AnDY ZDC Coincidence x 50
- North and South Muon arm background counters x varying scale factors

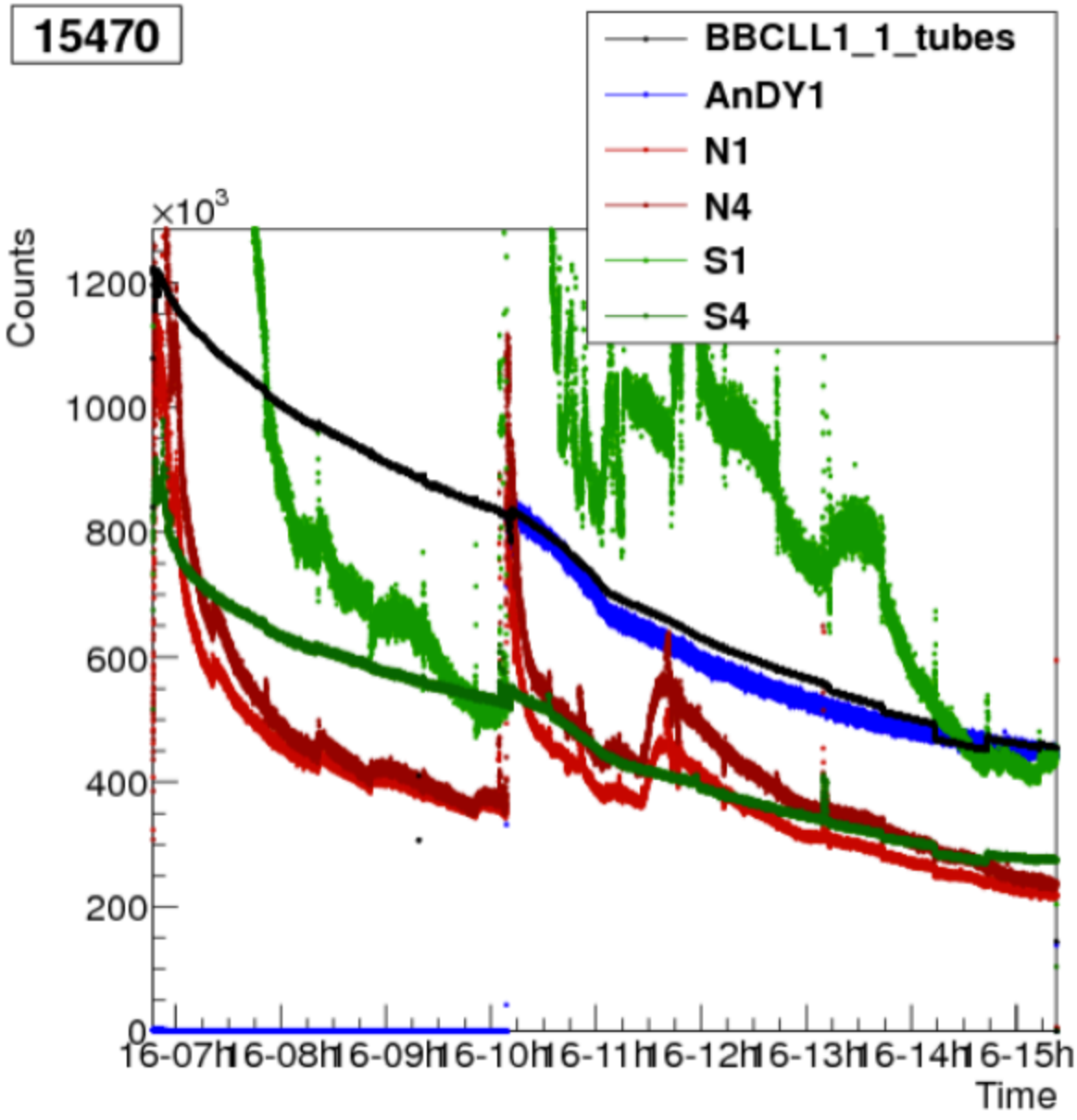
AnDY brought to collision
→Luminosity goes down
→Backgrounds go up

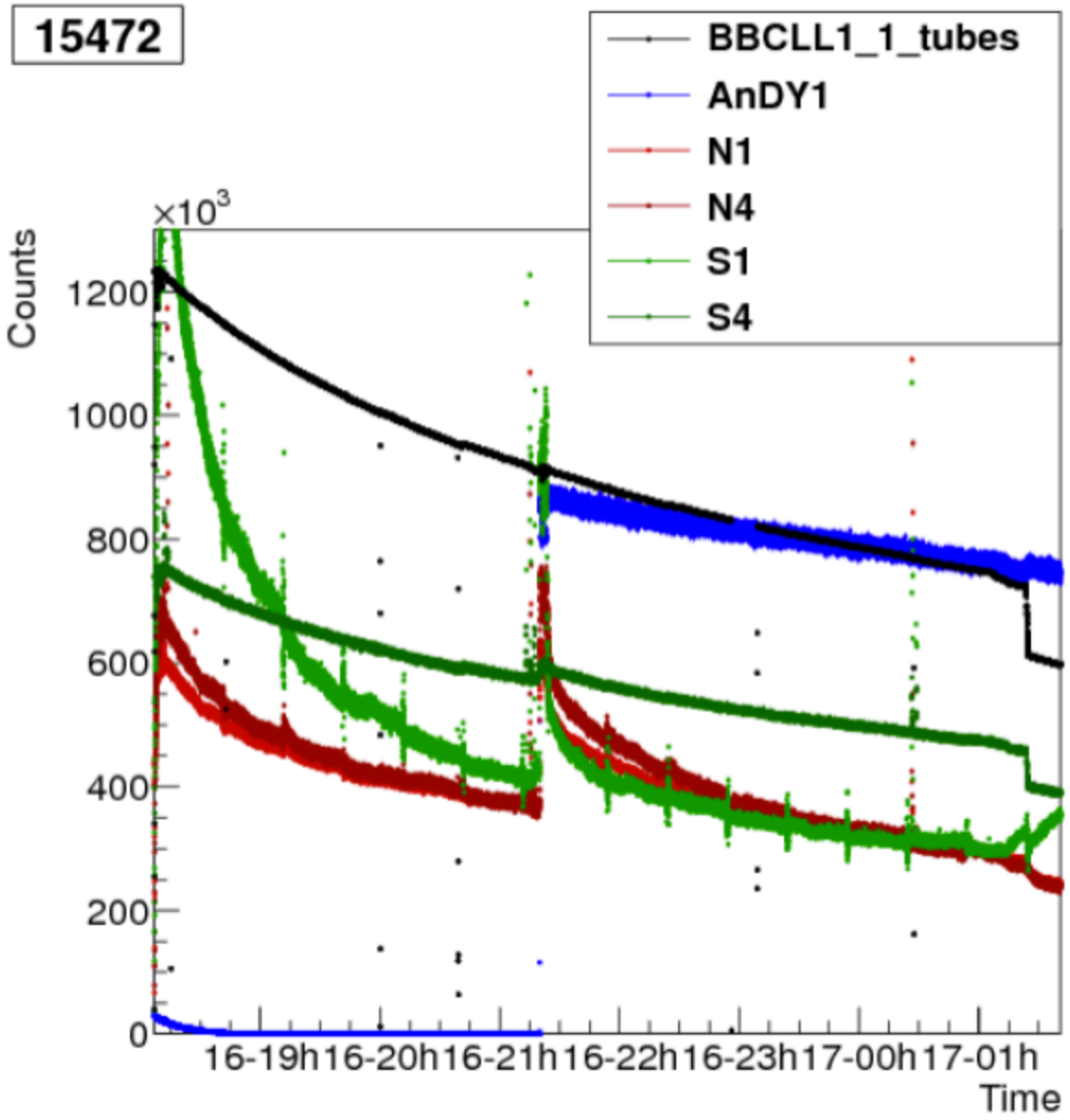


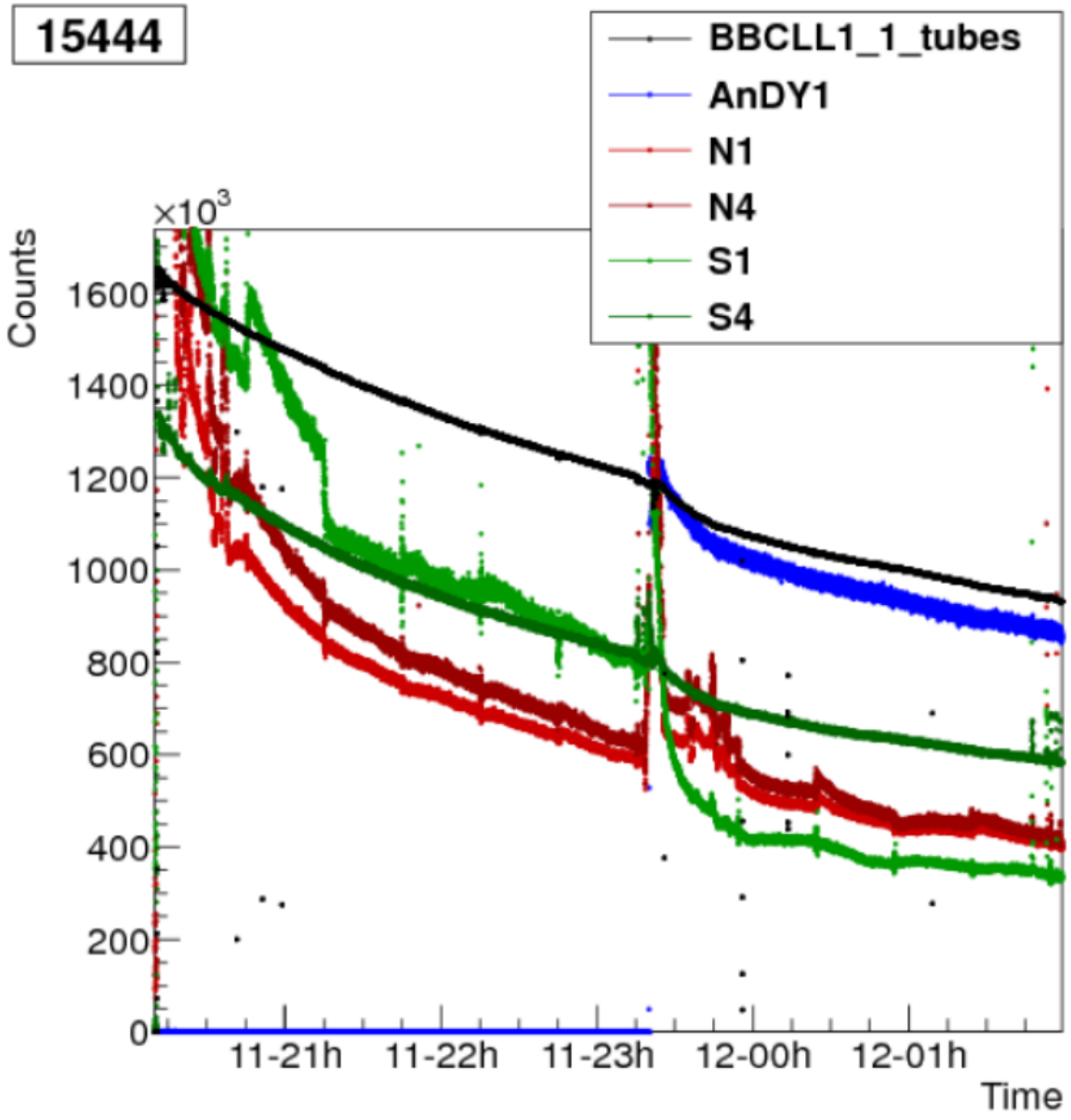
Increased background degrades our ability to analyze muon data and decreases the lifetime of RPC detector.

BACKUPS


15457
BBCLL1_1_tubes
AnDY1
N1
N4
S1
S4
Counts
×10^3
1000
800
600
400
200
0
13-14h
3-15h
3-16h
3-17h
3-18h
3-19h
3-20h
3-21h
3-22h
3-23h
Time


15470
BBCLL1_1_tubes
AnDY1
N1
N4
S1
S4
×10^3
Counts
1200
1000
800
600
400
200
0
16-07h
16-08h
16-09h
16-10h
16-11h
16-12h
16-13h
16-14h
16-15h
Time


15472
BBCLL1_1_tubes
AnDY1
N1
N4
S1
S4
×10^3
Counts
1200
1000
800
600
400
200
0
16-19h
16-20h
16-21h
16-22h
16-23h
17-00h
17-01h
Time


15444
BBCLL1_1_tubes
AnDY1
N1
N4
S1
S4
×10³
Counts
1600
1400
1200
1000
800
600
400
200
0
11-21h
11-22h
11-23h
12-00h
12-01h
Time