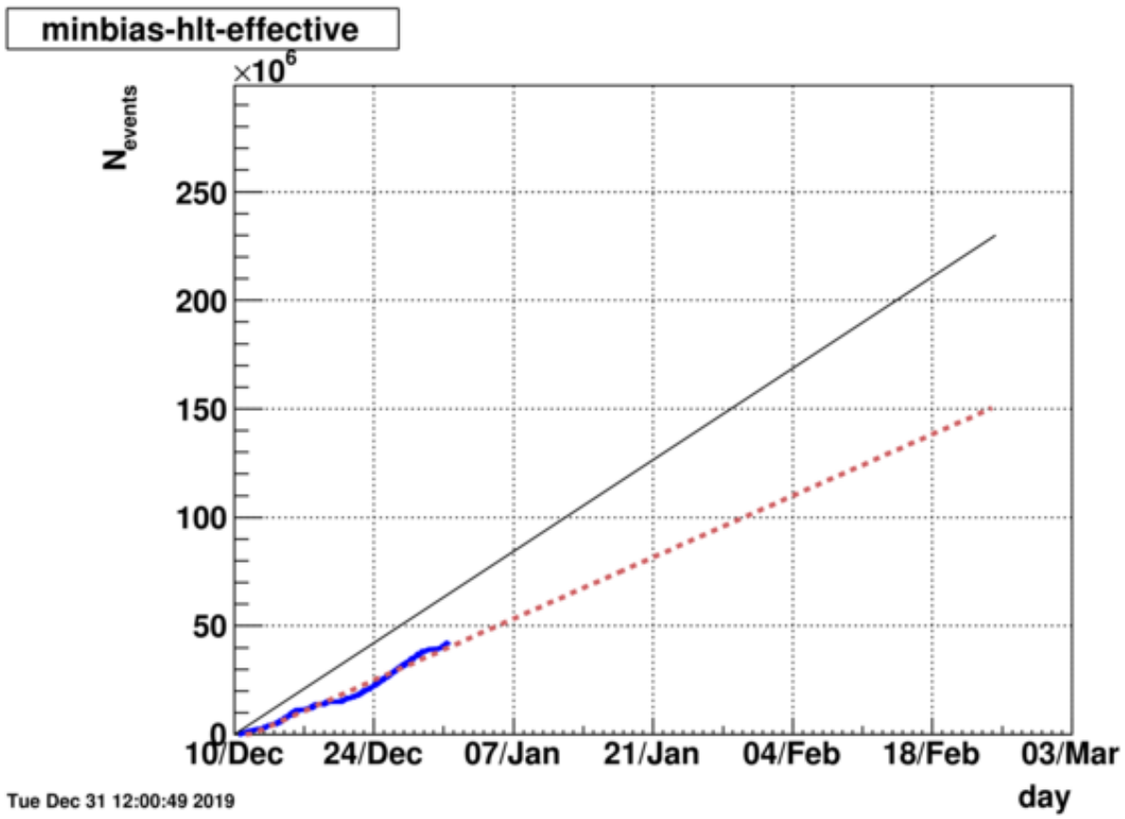
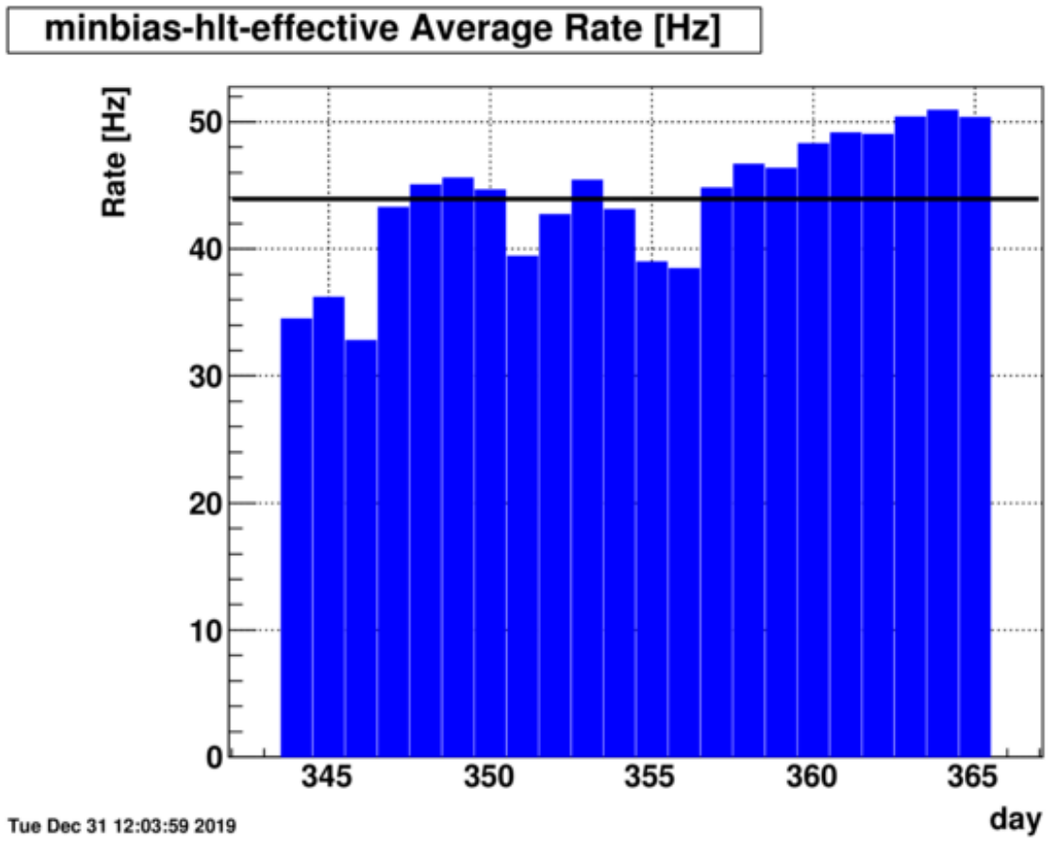
STAR status

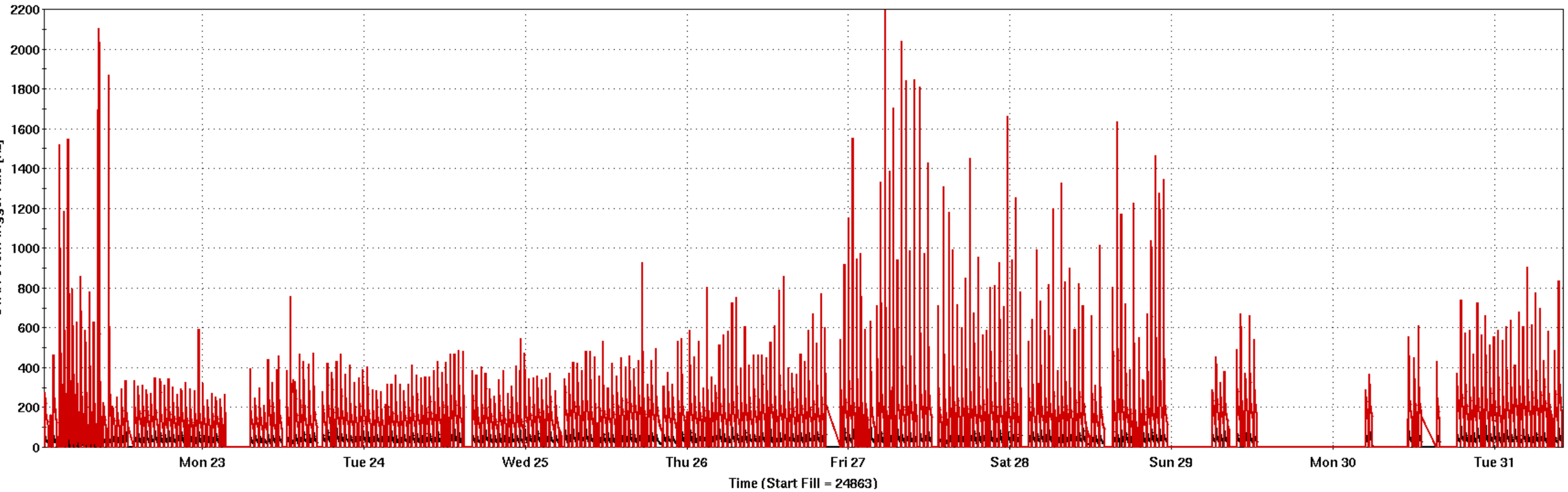
- Goal: 230 M "good" minimum-bias events at $\sqrt{s_{NN}}$=11.5 GeV
  - "Good events" rates with z vertex with in ±70cm and ±150 cm (with efficiency for physics 30% in 70-150cm)
  - "effective good event" rates ~1.22 * rates in good event rates in ±70cm
  - 42.5M effective good events collected.
    - To reach the goal: ~60% increase in yield needed (assuming 11.5 GeV run until Feb 25)
- Fixed target runs to be scheduled ensuring the best performance of eTOF
  - In Jan. after 13th?
- All STAR sub-systems used for physics are performing well
- Continuous optimization of data collection procedure
  - minimizing detector ramping time, maximizing efficiency

Goal vs projection at 11.5 GeV

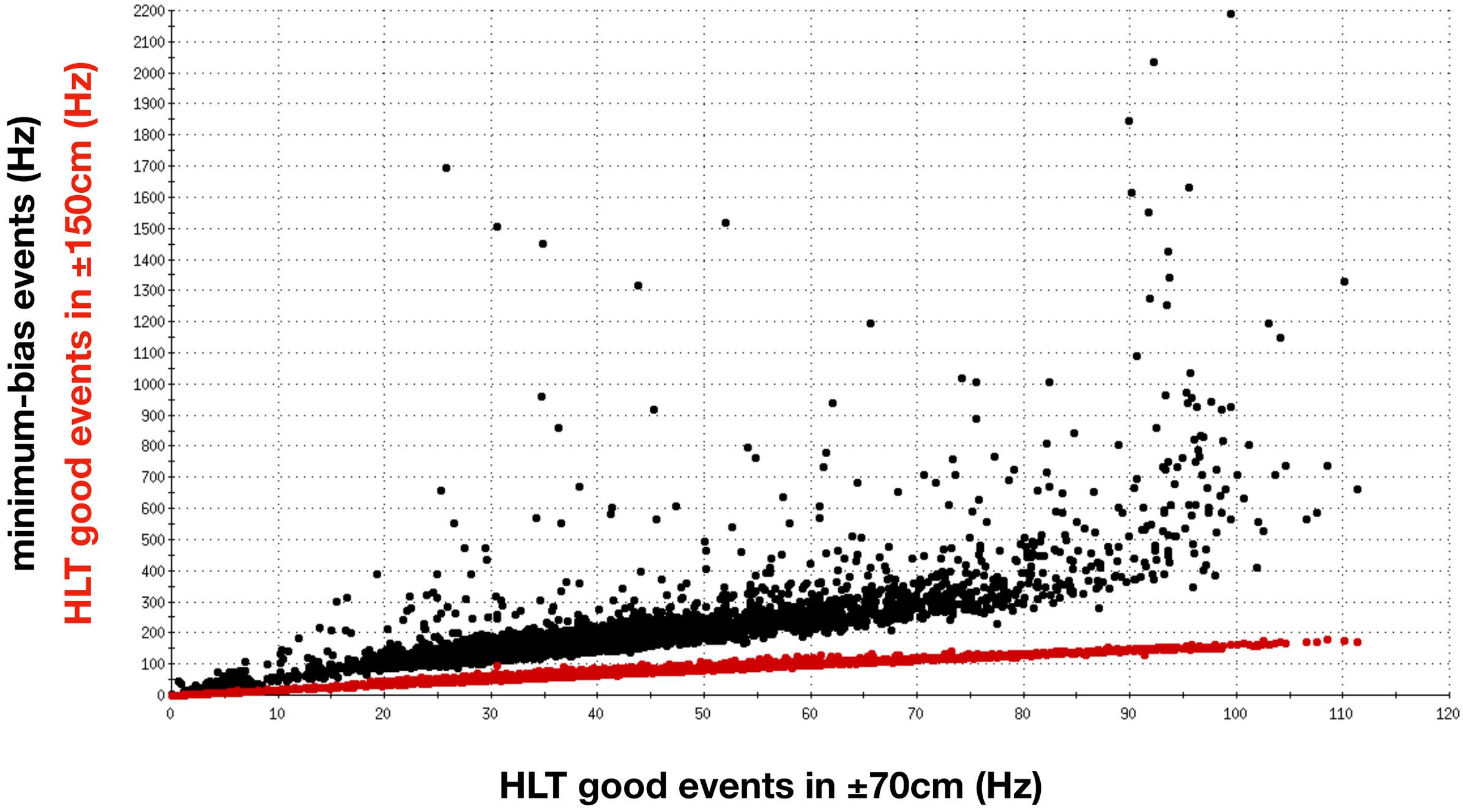




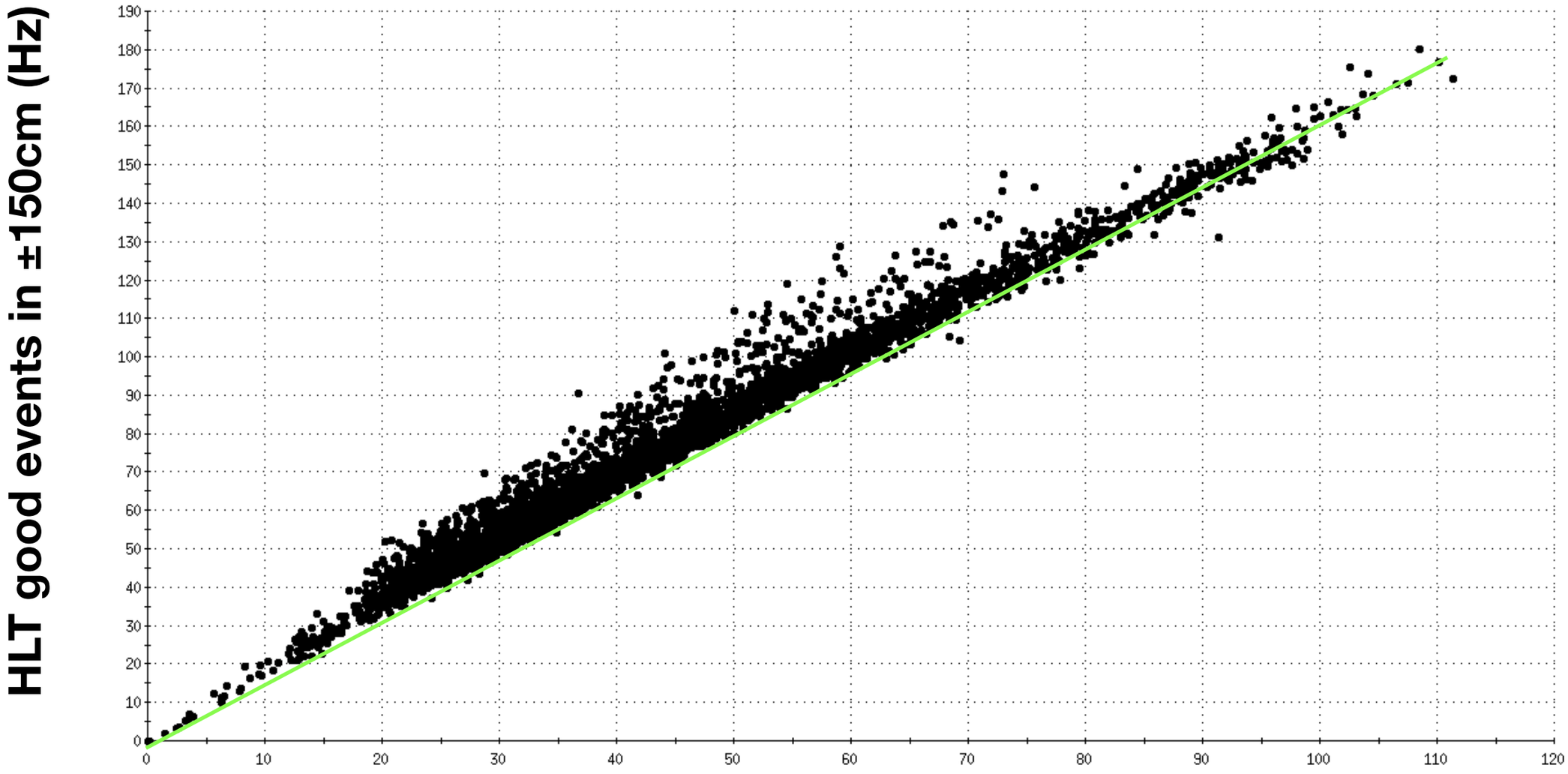
minimum-bias and HLT good events (Hz)



minimum-bias vs HLT good rates



HLT good events in ±150cm vs ±70cm



Beam Use Request for Run20

	Beam Energy (GeV/nucleon)	$\sqrt{s_{NN}}$ (GeV)	μ_B (MeV)	Run Time	Number Events requested / collected ("Good")	
	9.8	19.6	205	4.5 weeks	400M	582M
	7.3	14.5	260	5.5 weeks	300M	324M
Run20	5.75	11.5	315	9.5 weeks	230M	
Run20	4.55	9.1	370	9.5 weeks	160M	
Run20	3.85	7.7	420	12 weeks	100M	
Run20	31.2	7.7 (FXT)	420	2 days	100M	51M
Run20	19.5	6.2 (FXT)	487	2 days	100M	
Run20	13.5	5.2 (FXT)	541	2 days	100M	
Run20	9.8	4.5 (FXT)	589	2 days	100M	
Run20	7.3	3.9 (FXT)	633	2 days	100M	53M
Run20	5.75	3.5 (FXT)	666	2 days	100M	
	4.55	3.2 (FXT)	699	2 days	100M	201M
	3.85	3.0 (FXT)	721	2 days	100M	3.7M+300M (run18)

- Top priority for Run20 is measuring next two energies in BES-II at **$\sqrt{s_{NN}}$= 11.5 GeV and 9.2 GeV**
- Finishing **fixed target** measurements at $\sqrt{s_{NN}}$ = 3.5, 3.9, 4.5, 5.2, 6.2, 7.7 GeV

Event statistics needed for BES-II (in millions)

Collision Energy (GeV)	7.7	9.1	11.5	14.5	19.6
μ_{B} (MeV) in 0-5% central collisions	420	370	315	260	205
Observables					
R_{CP} up to $p_{\mathrm{T}} = 5$ GeV/c	-	-	160	125	92
Elliptic Flow (ϕ mesons)	80	120	160	160	320
Chiral Magnetic Effect	50	50	50	50	50
Directed Flow (protons)	20	30	35	45	50
Azimuthal Femtoscopy (protons)	35	40	50	65	80
Net-Proton Kurtosis	70	85	100	170	340
Dileptons	100	160	230	300	400
$>5\sigma$ Magnetic Field Significance	50	80	110	150	200
Required Number of Events	100	160	230	300	400