



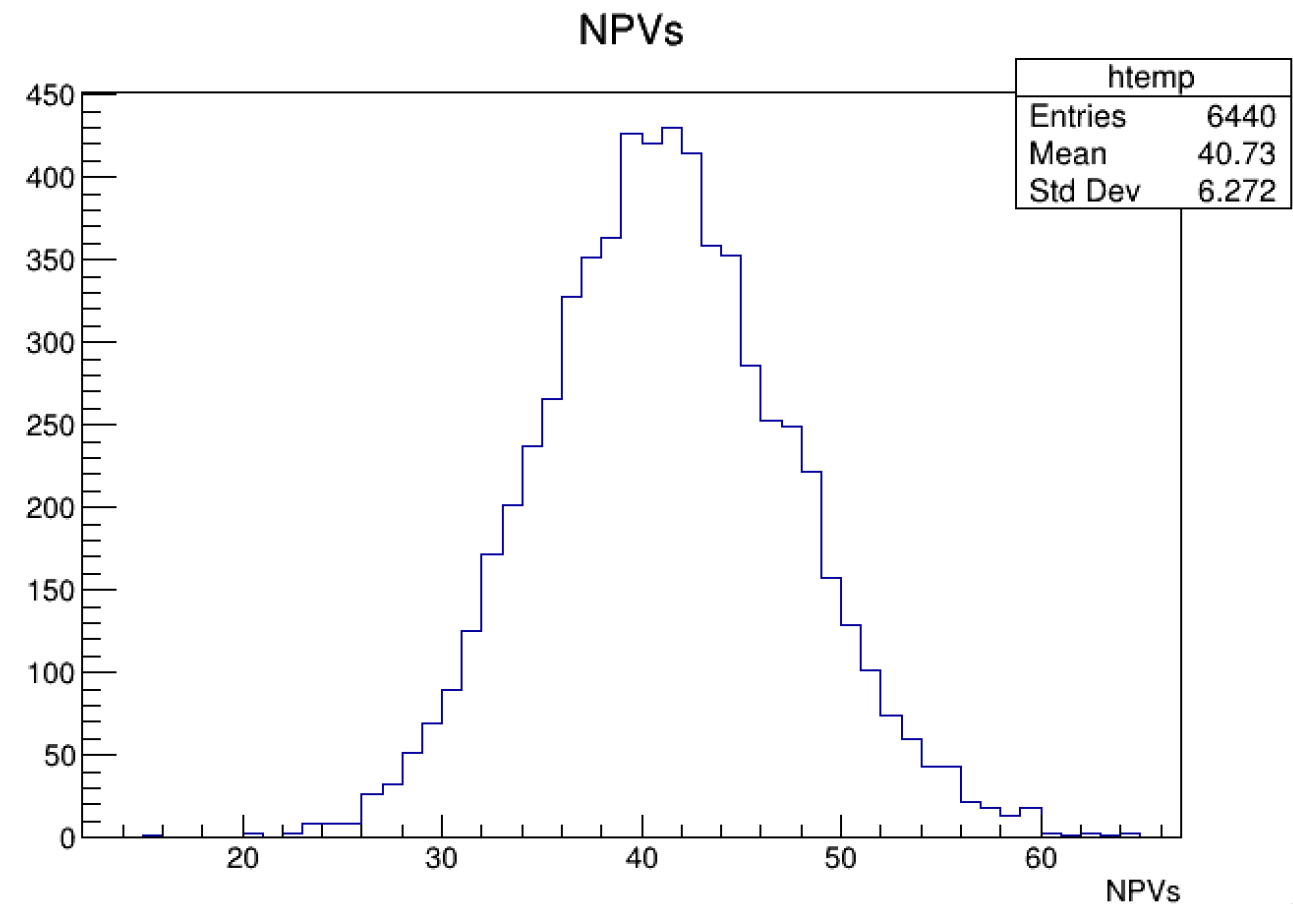
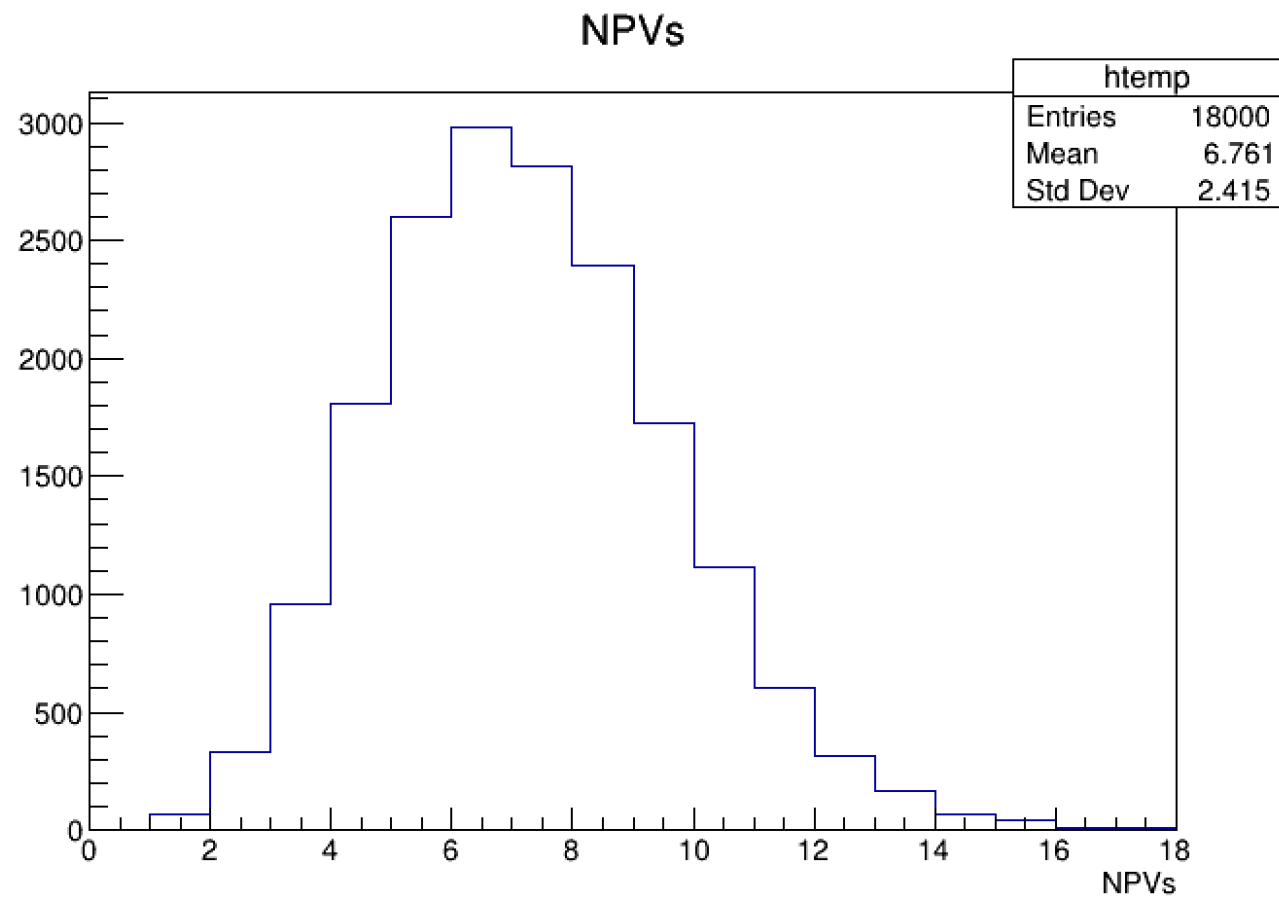
Studies for Velo-U2

Serena Maccolini, Angelo Carbone
TIMESPOT meeting - WP4

23 June 2020

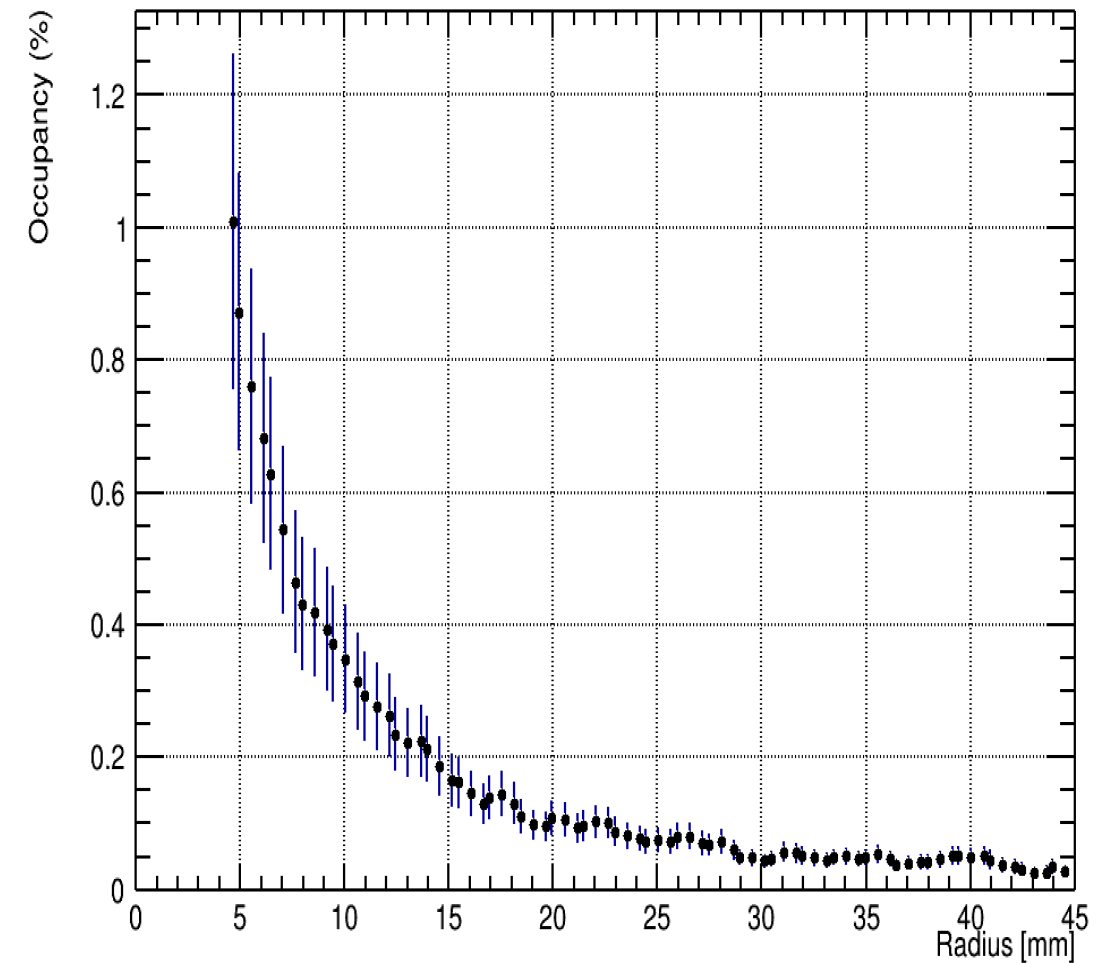
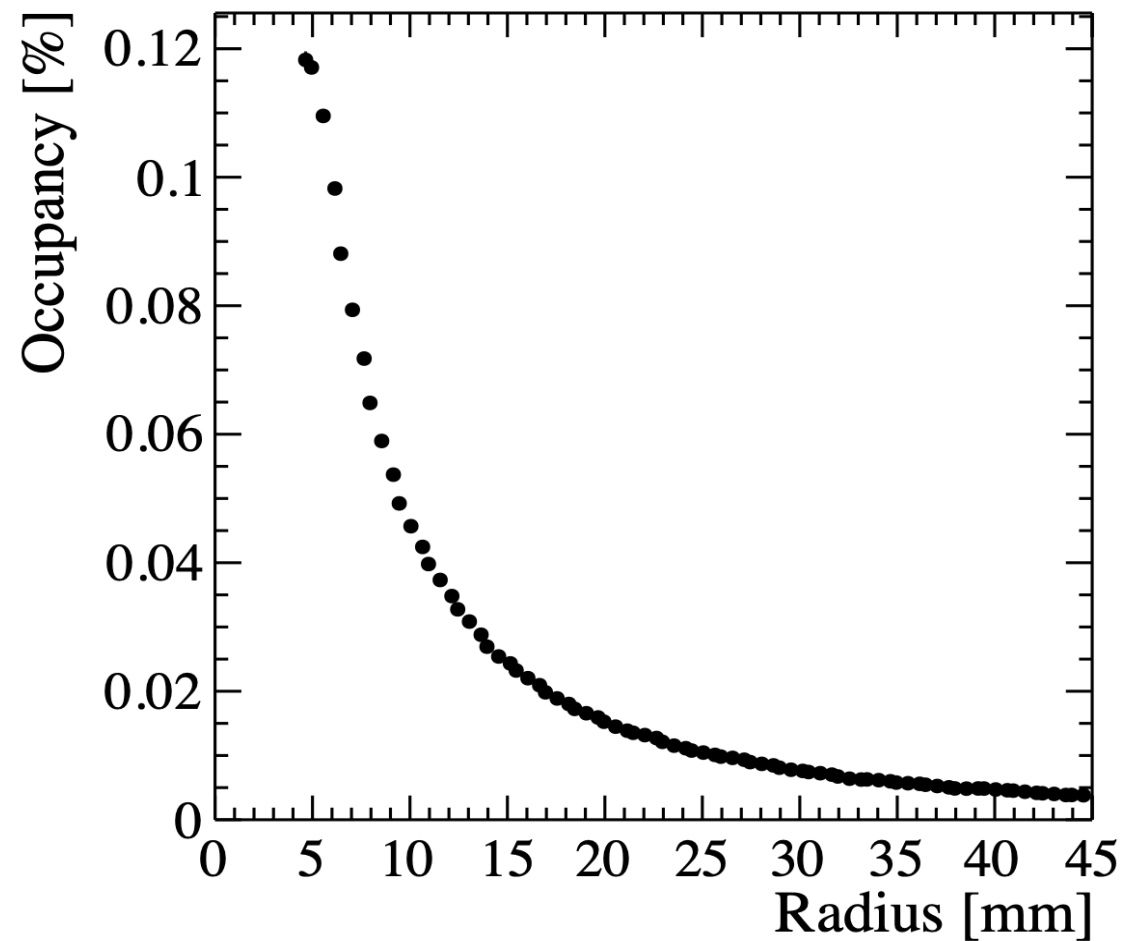
From Run3 to Run5

- From an average of 7 PVs per event to 41 PVs



From Run3 to Run5

- Occupancy increased of a factor ~ 10



Introducing time

- PV time non simulated in Gauss
-> extracted from $G(0,212)$ ps
- OriginVertices and EndVertices given by Geant4
- Implemented in *clustering* and *tracking*
with customizable resolution σ_t
- Today:
best case scenario (i.e. $\sigma_t = 0$)
- predicted timing
(hit times are within a prediction window)

Performance FoM

- Velo particle = $2 < \eta < 5$ and is not an electron
- Efficiency = # of reconstructed velo particles / # of reconstructible velo particle
- Ghost rate = # of non-assigned tracks / # of reconstructed tracks

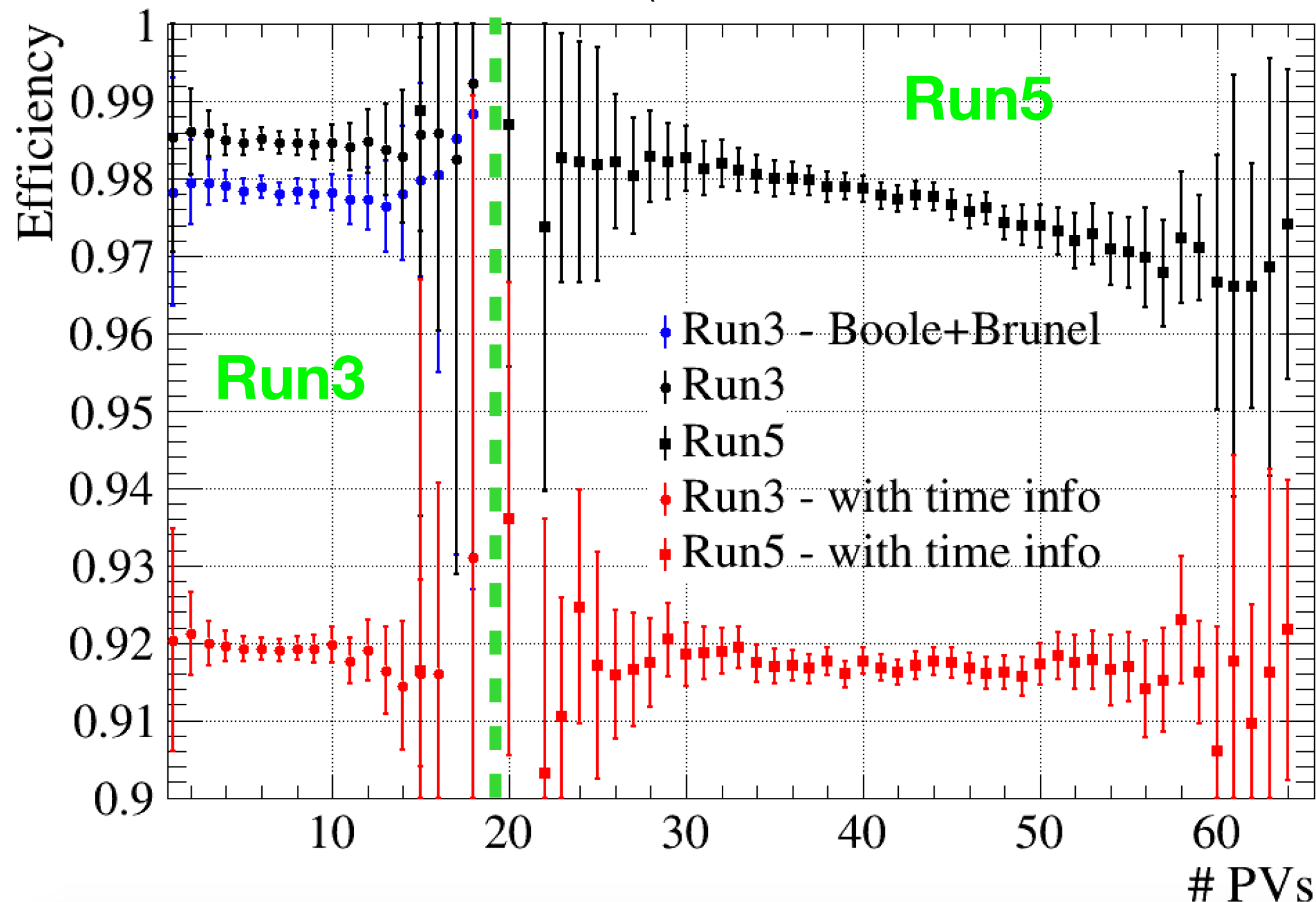
Performances - with predicted timing

- Efficiency

Worse efficiency

BUT: denominator given by VELO tracks

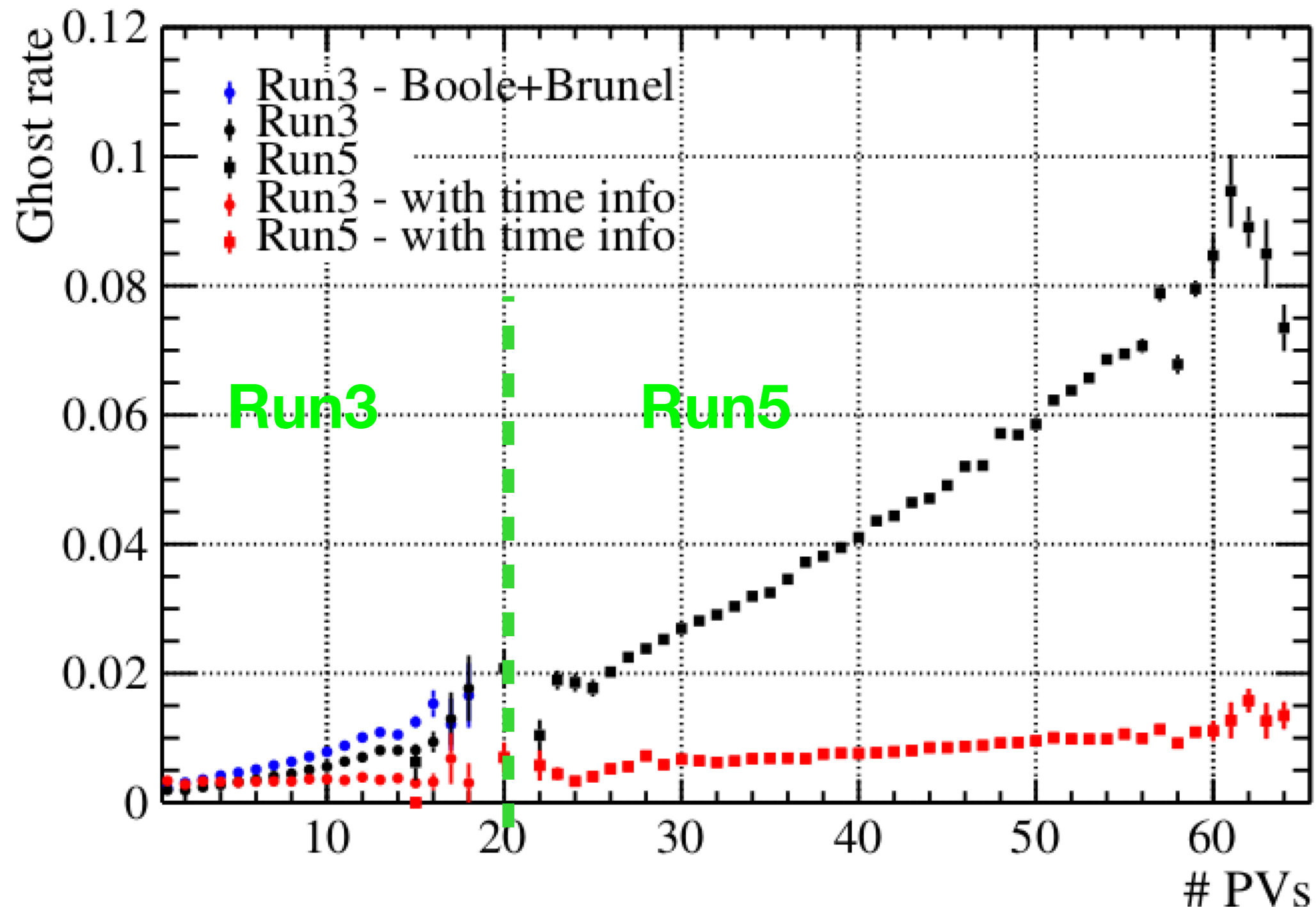
(% of low momentum tracks where $v=c$ is wrong)



Performances - with predicted timing

- Ghost rate

Better ghost rate



Integrated values

	Run3		Run5	
	ϵ VELO(%)	PGHOST(%)	ϵ VELO(%)	PGHOST(%)
FastSim	98.5	0.40	97.8	4.20
FullSim	97.8	0.44		
150 μ m Foil [Laurent U2 talk]	98.1	0.5		
withTime	91.9	0.33	91.7	0.78



Back-up slides