

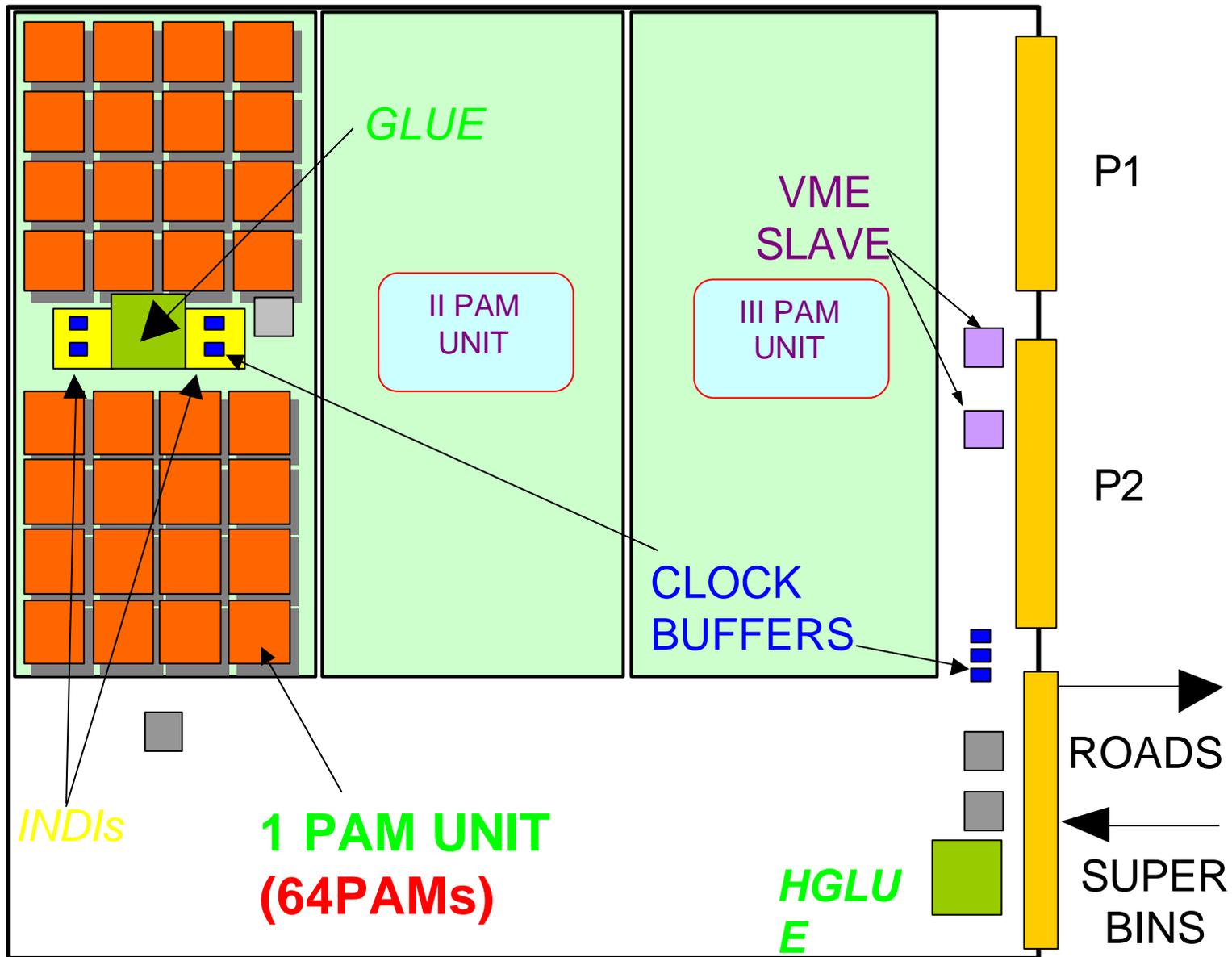
Upgrading the SVT trigger?

Two options:

1. Change only the **AMBOARD: AMB-only** option.
 - use the 1998 board tested within SVT
 - use a pin-compatible Standard Cell chip (**old-SCAM**)
2. Use the Fast Track R&D: **FTK** option
 - Change everything after Hit Finder (HF).
 - Use a new Standard Cell chip (**new-SCAM**)

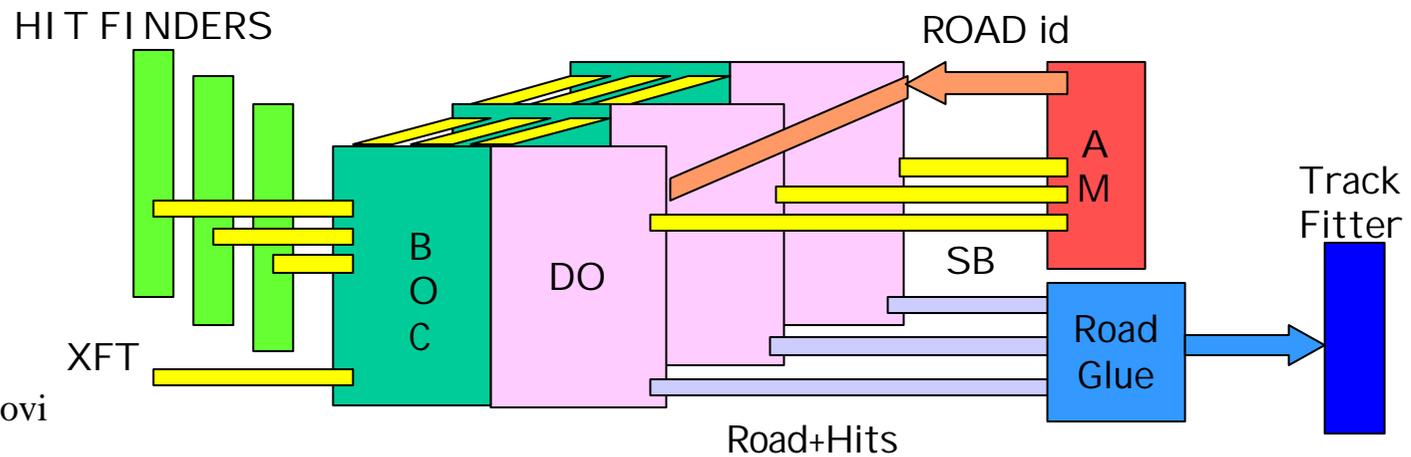
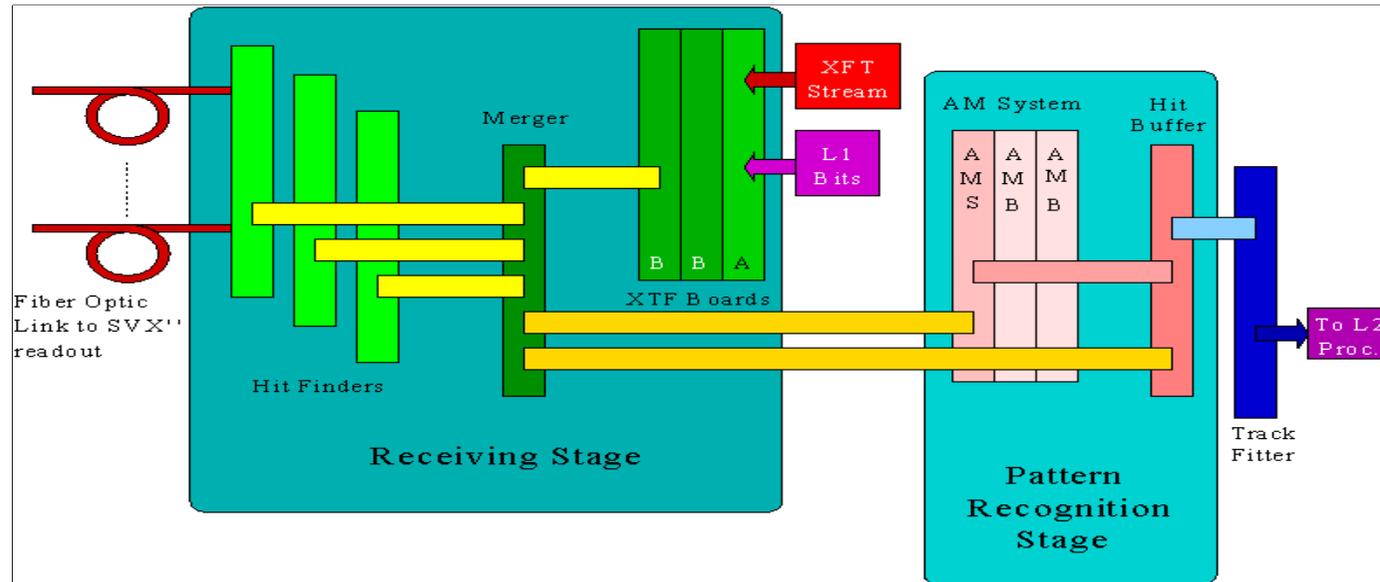
Goal? High Pt physics : Why?

1. It Will take most of the future bandwidth: a **new SVT** should use **at least a fraction** of it.
2. If SVT works for **High PT physics**, it will work also for **Low Pt physics**.
3. Large pattern bank \Rightarrow **thin roads** \Rightarrow few fakes \Rightarrow it helps to increase the track efficiency:
 - To look for tracks inside b-jets: implement 3/4, 4/5
 - To reduce HF thresholds and increase the hit efficiency
4. Large pattern bank \Rightarrow Silicon-only patterns to enlarge the η coverage for e, μ, τ objects
5. Large pattern bank \Rightarrow Lower Pt threshold?
Stereo layers? I SL layers?



AMB-ONLY option

FTK option



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AMB-ONLY vs FTK

Max # of patterns/wedge:	128 k	32000 k
Max # of layers	8 (isl?)	12 (Stereo?isl?)
Standard Cell chip	*	*
# boards to be changed	1	all after HF
Building time (years)	1-2	1-2+startup
Working group (fte)	small	large
Installation	~us	us+collaborators
Maintenance	like now	"
Timing advantages:		
• Few fakes	*	***
• Faster Hit loading (low Hit finder TH)	like now	6 buses if...
• Road readout overlap hit loading		*

Studies to do

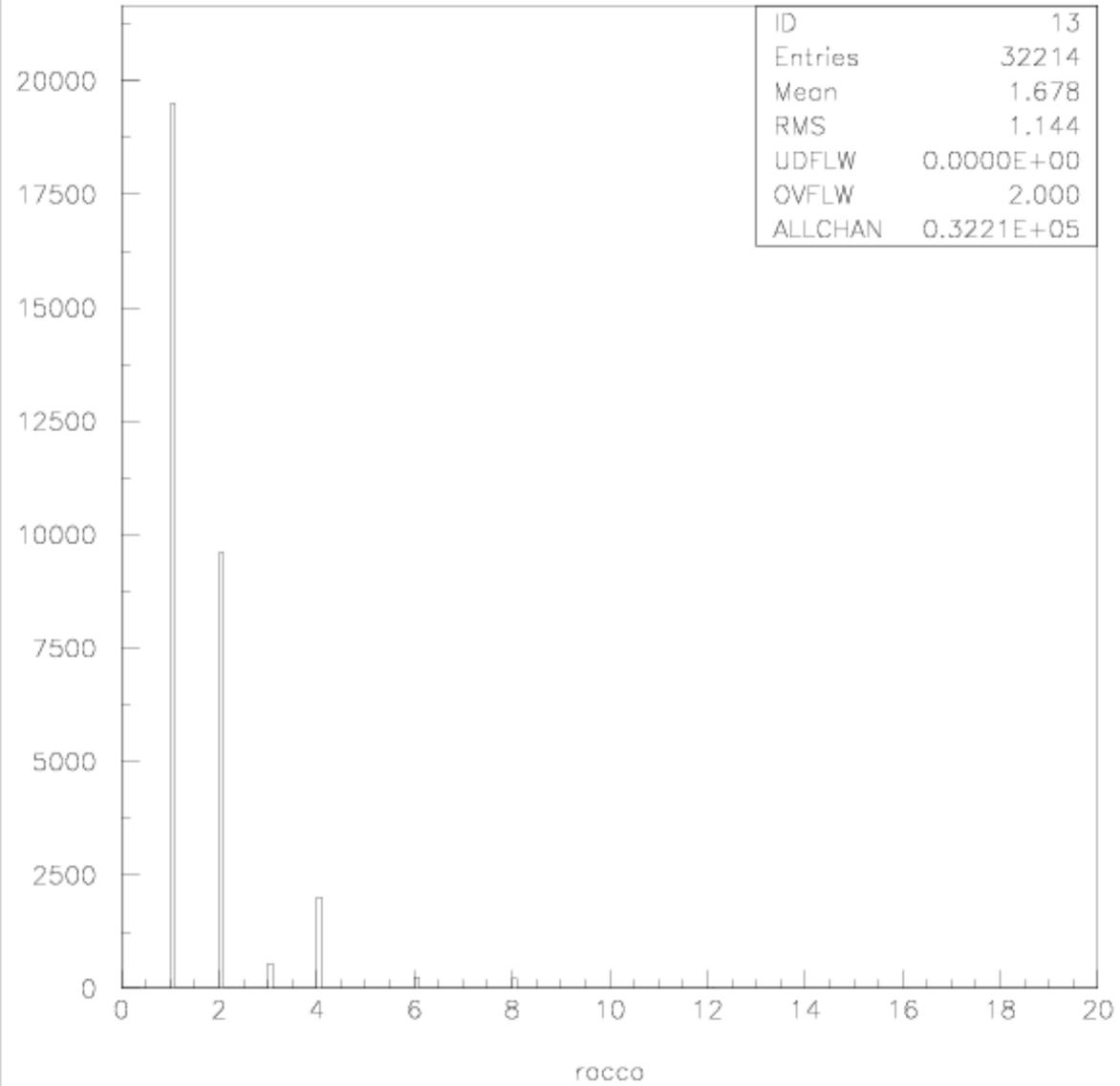
$\langle \# \text{ fit} \rangle = \langle \# \text{ comb} \rangle * \langle \# \text{ roads} \rangle$ for trigger samples : $Z \rightarrow bb$, $\text{Met}+bb$, Low pt B physics .
Better: run on Lvl1 +auto Lvl2 accept (?)

- a) SVT now (4/4, 4/5);
- b) SVT now lower HF thresholds (low TH);
- c) SVT 128 kpattern; 5 layers bank:
 - Small roads and 4/5-3/4 (majority)
 - Small roads + majority + low TH
- d) If (c) is not ok \rightarrow repeat with larger banks
(up to 32 Milion patterns/wedge)
- e) offline tracking: study SVT efficiency in different cases.

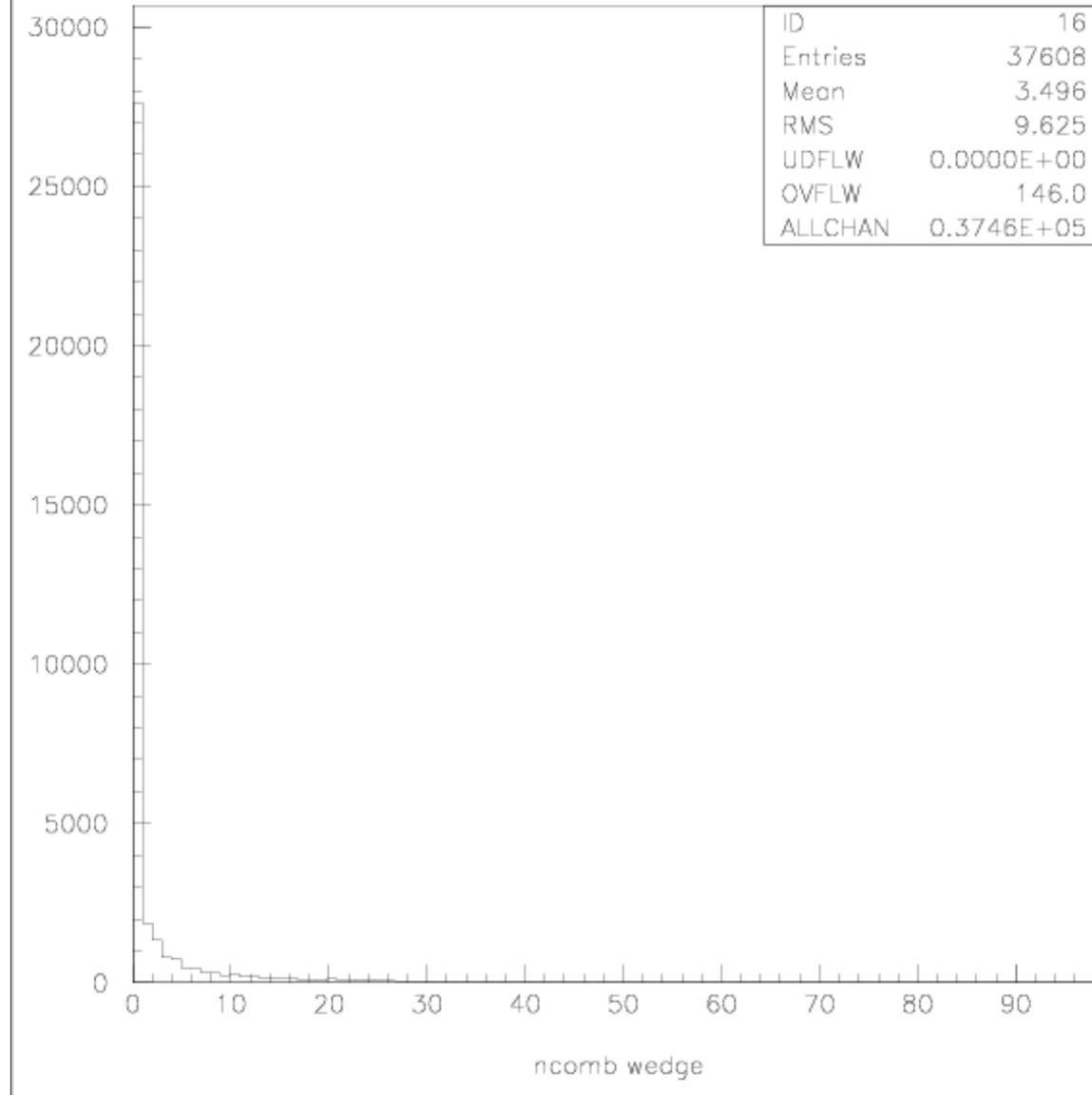
Fitter work load

	B hadronic L1_TWO_TRK2_DPFI 90	Z-bb L1_TWO_TRK2_&_TWO _CJET5
Ncomb/road	1.70	2.09
Nroad/wedge	0.89	1.46
Ncomb/wedge	1.82	3.50

Z->bb comb/road

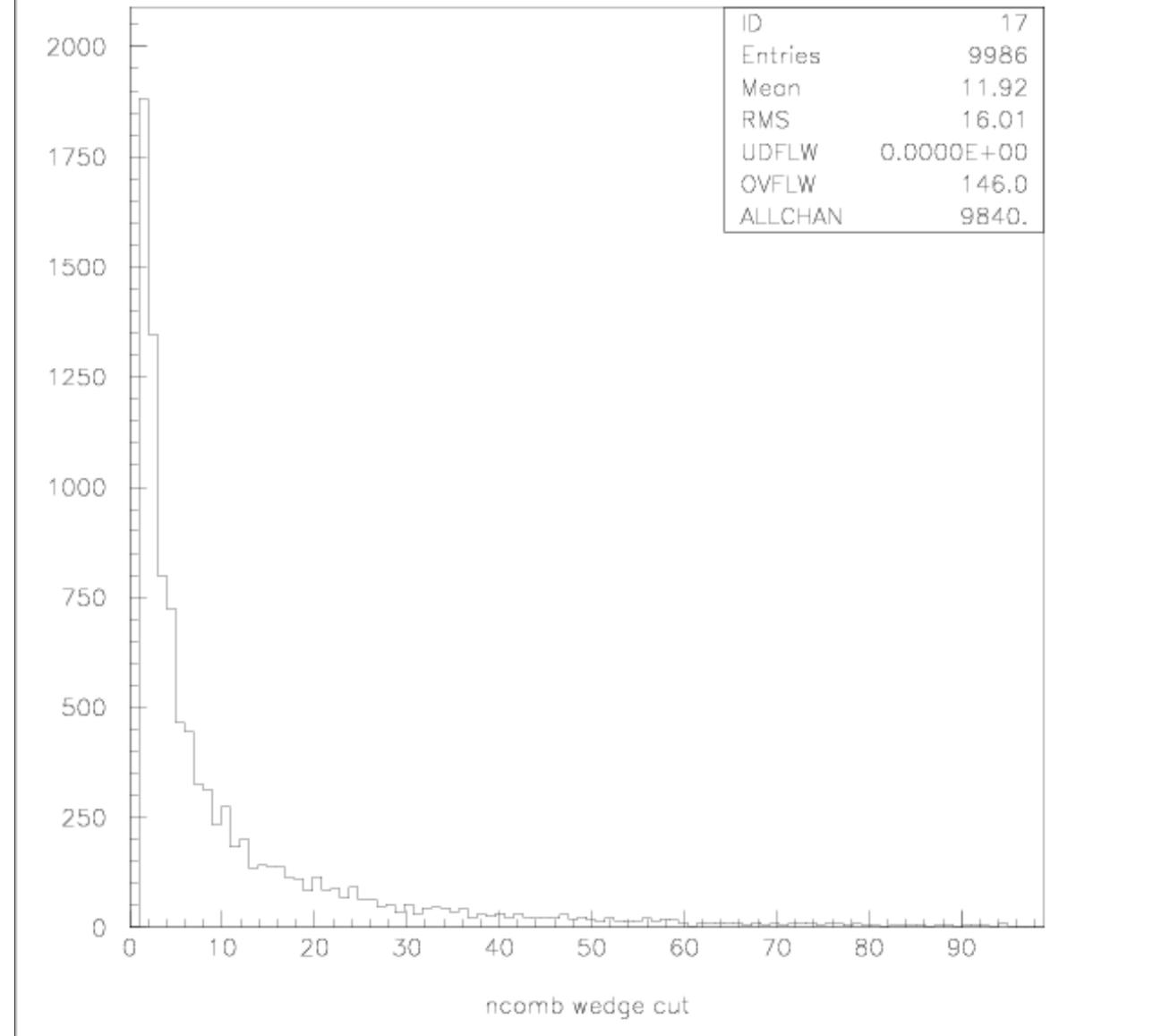


Z->bb Ncomb/wedge



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Z->bb Ncomb/wedge (zoom)



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