Ghost Bands and Start Times

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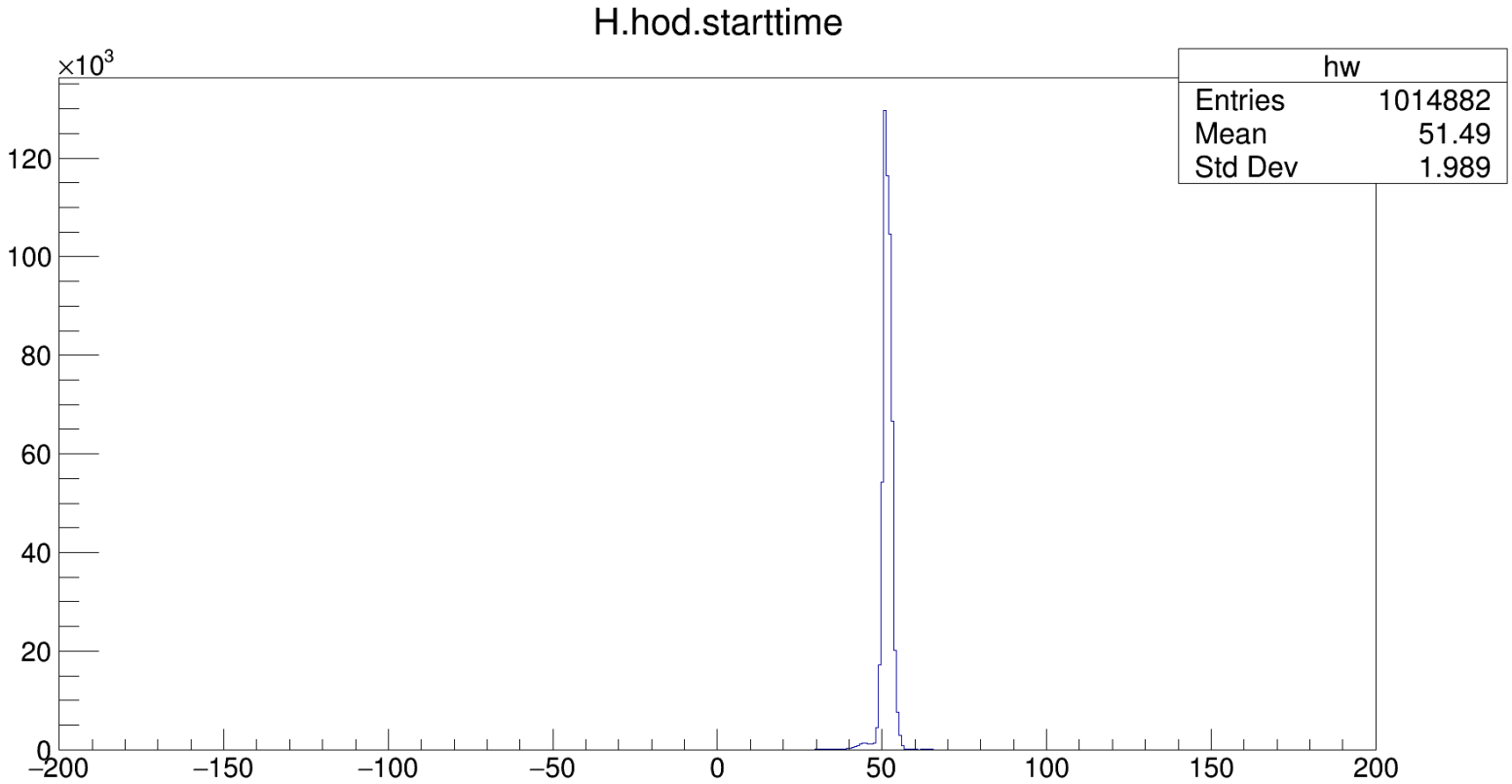
Introduction

- Following analysis meeting, implemented some PID/δ cuts in the script
- Didn't have much affect, didn't remove the "ghost bands" in the data
- Decided to delve a little deeper into the timing
- hcana defines AdcTdc time differences via -

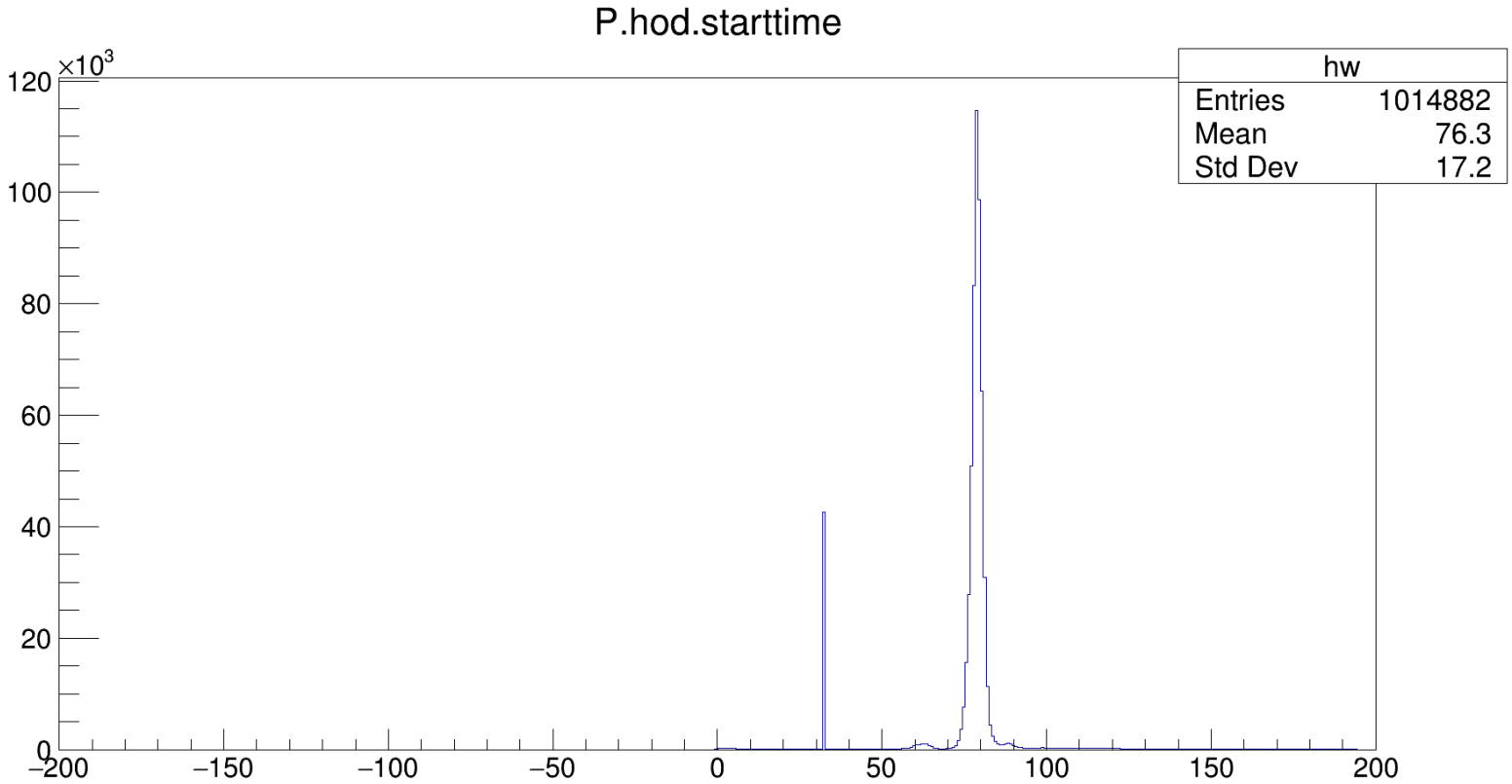
$$HodoStartTime - [Det]AdcTime$$

- So actually, all the "ghost" bands could all be due to a weird hodoscope time

HMS Hodo Start Time



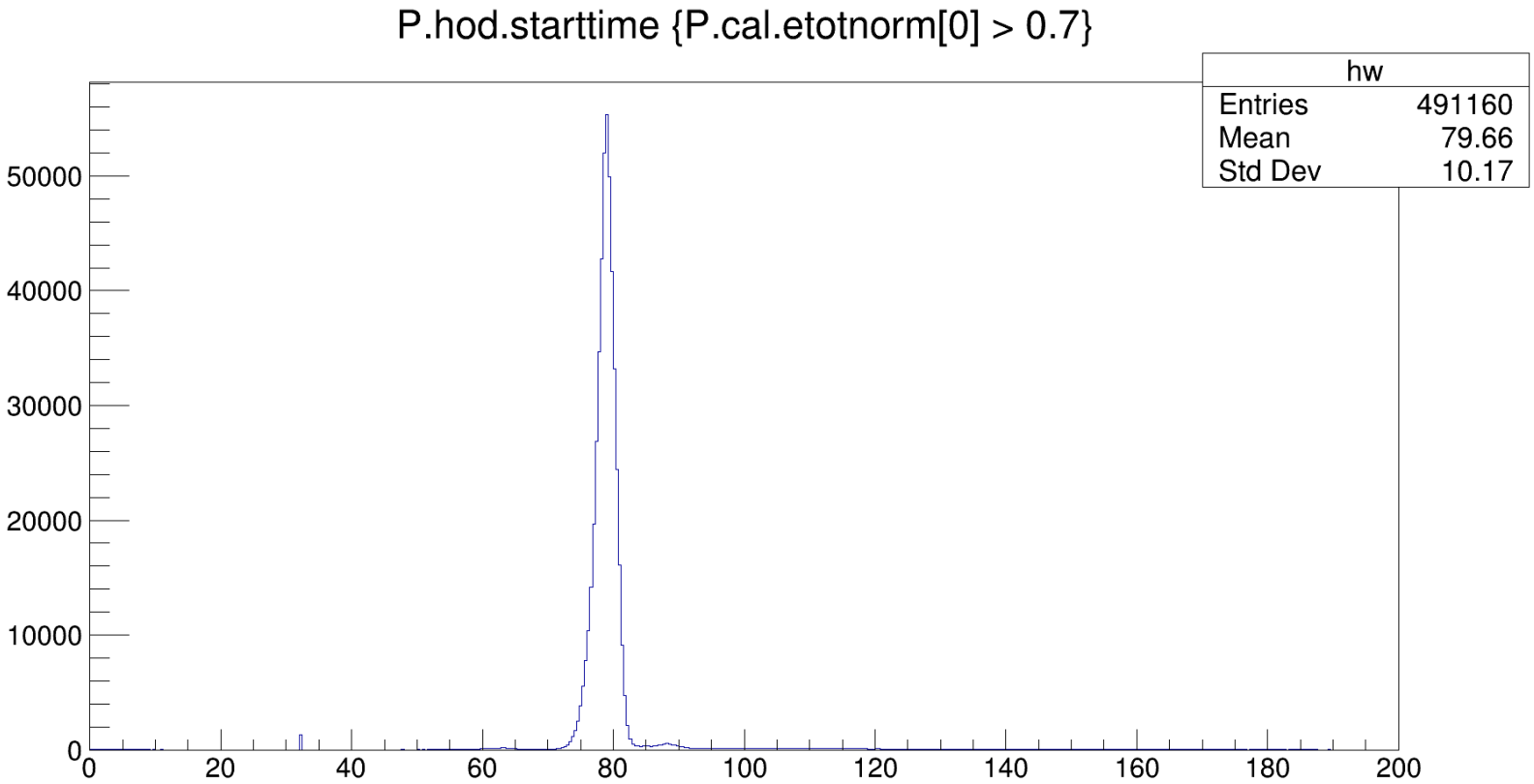
SHMS Hodo Start Time



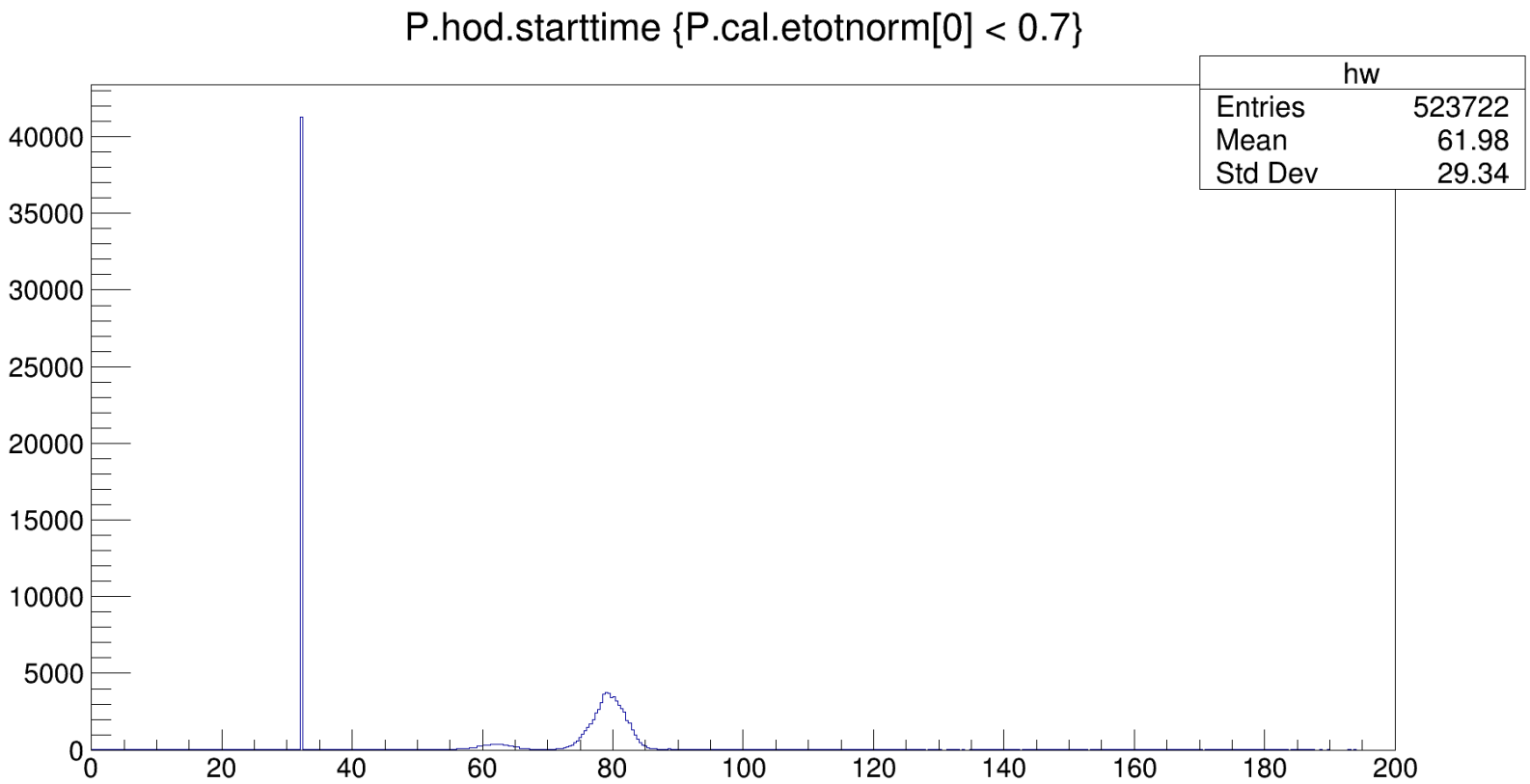
HMS vs SHMS Hodo Start Time

- Already, we can see the HMS and SHMS distributions look very different
- Note that both have a peak off to the left at -1000 that correspond to events where that detector did not trigger
- HMS detectors are all fine so the distribution for this is as we might expect
- Let's take a closer look at the SHMS distribution with some PID cut

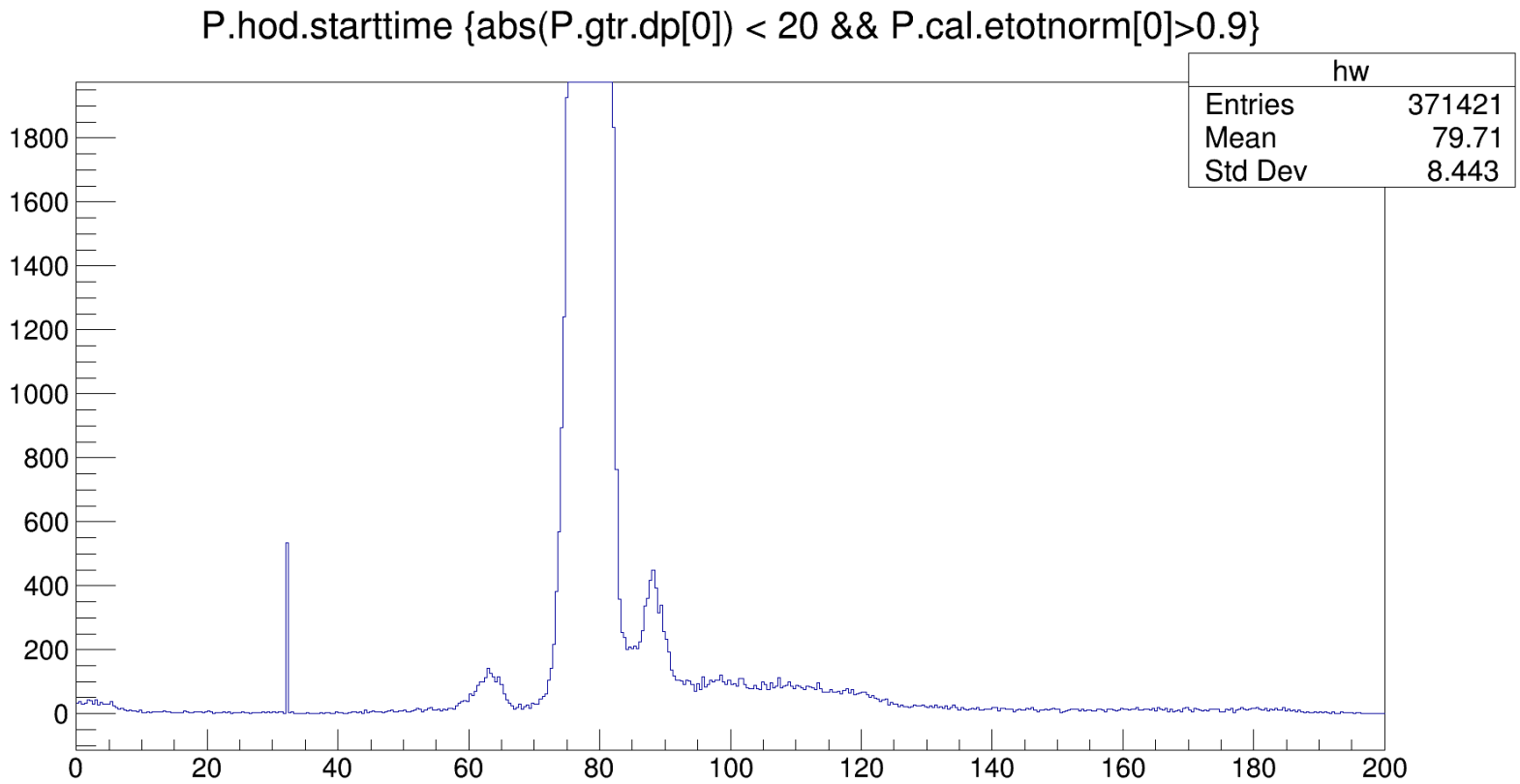
SHMS Hodo Start Time - Electron PID



SHMS Hodo Start Time - Hadron PID



SHMS Hodo Start Time - Electron PID, Detail



Comments

- PID cuts do indeed some to have little difference on the start time distribution, propagates through to time diff plots
- One notable odd detector is the Aerogel, time difference is defined in the same way, yet values are clearly an absolute value
- Nothing I saw in hcana indicated that this was the case, need to investigate further
- It is likely Aerogel *does* also have weird behaviour
- So, what next? Include the ghost band? Go back a step?