

Status Update B-TOF

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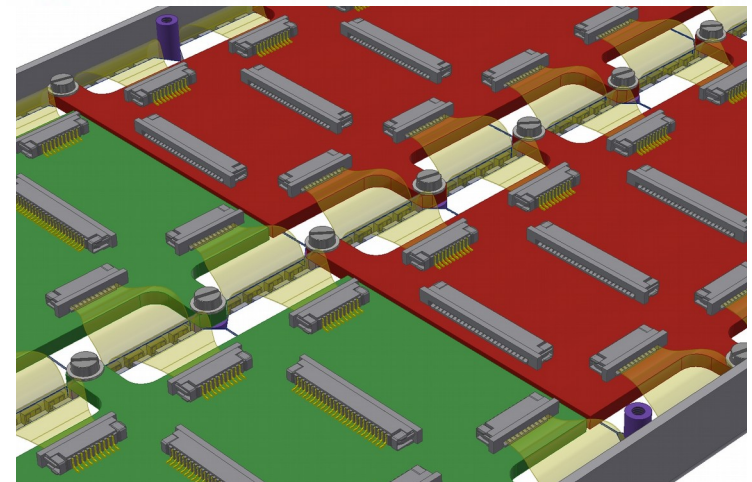
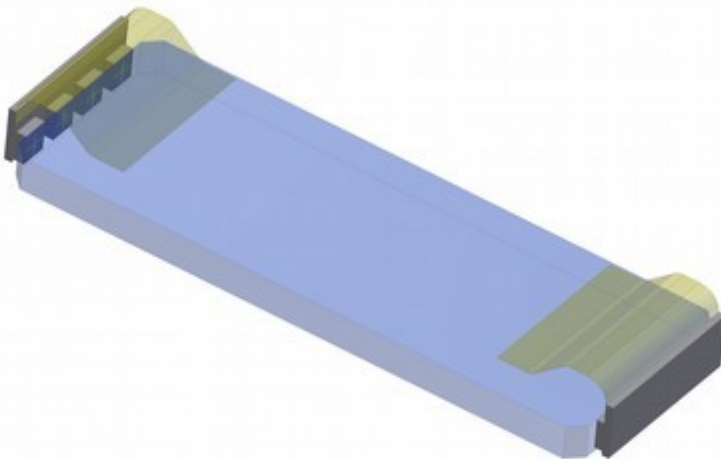
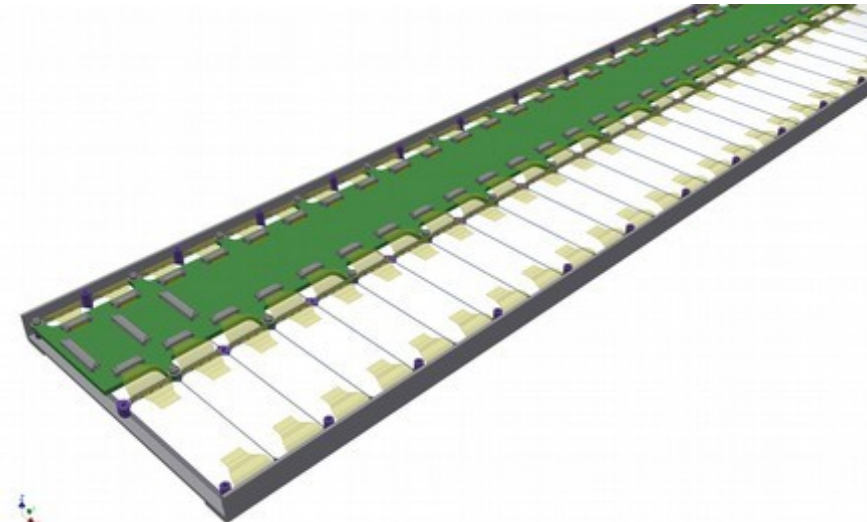
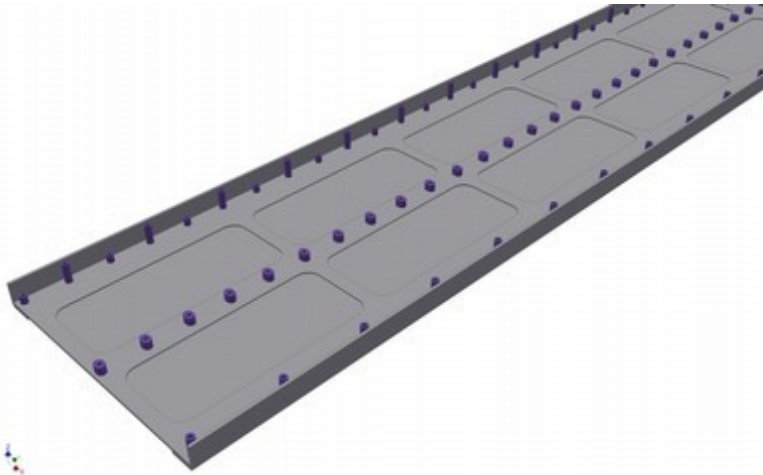
On behalf of the Panda SciTil group

Panda Collaboration Meeting, GSI, 06.11.2019

Outline

- Status of production for the Prototype in the new design
- Progress on data analysis of CERN 2018 data

Reminder of new Design



Railboard v3 Progress

- One old railboard is now made up of 4 parts
 - 2 parts in front 2 in the back on the FEE side
- 2 of 4 PCBs have been produced
 - The FEE side is supposed to be finished tomorrow (Nov 7th)
- The boards are still in China
 - All PCB parts will be shipped together

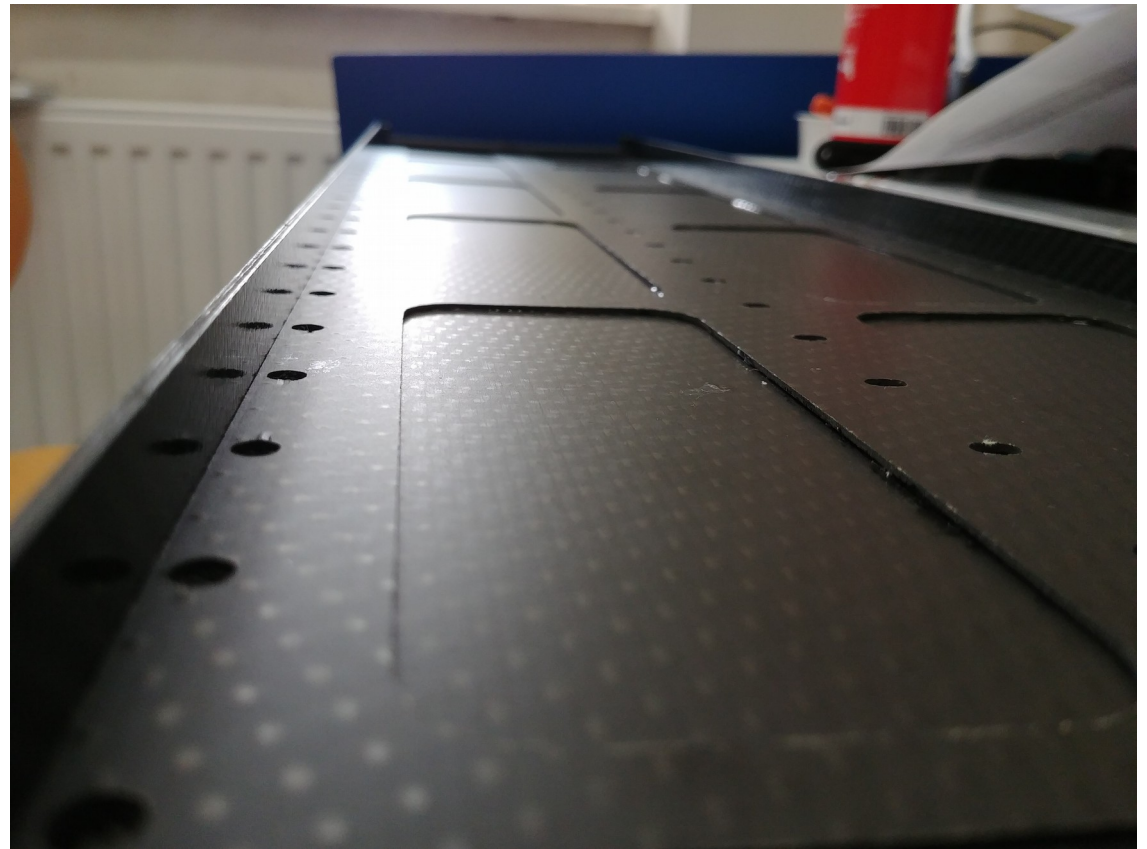


Railboard Carbon Holding Structure



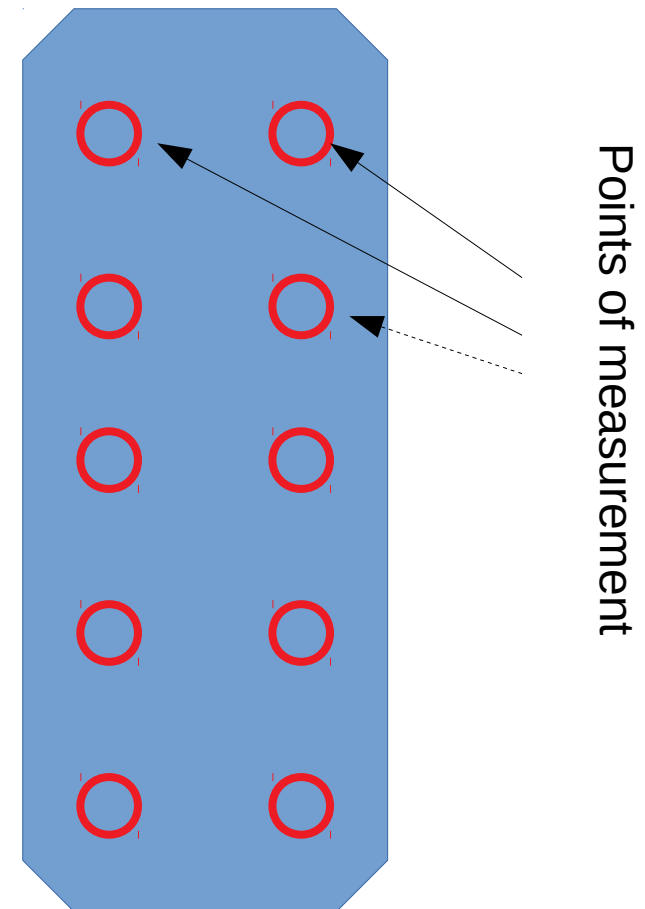
Railboard Carbon Holding Structure

- The carbon holding structure has been successfully been produced
- 1 mm carbon sheets were used
- High mechanical strength
 - We estimate we can reduce the needed carbon by 1/3 ($0.4 X/X_0$)



Scintillator Chamfer

- Wrapped scintillators with chamfers should be tested against no chamfer
- Multiple points along the Scintillator are irradiated by Laser or beta source
- Measurements are done by student
- Have issue with SiPM solder breaking off of the PCB

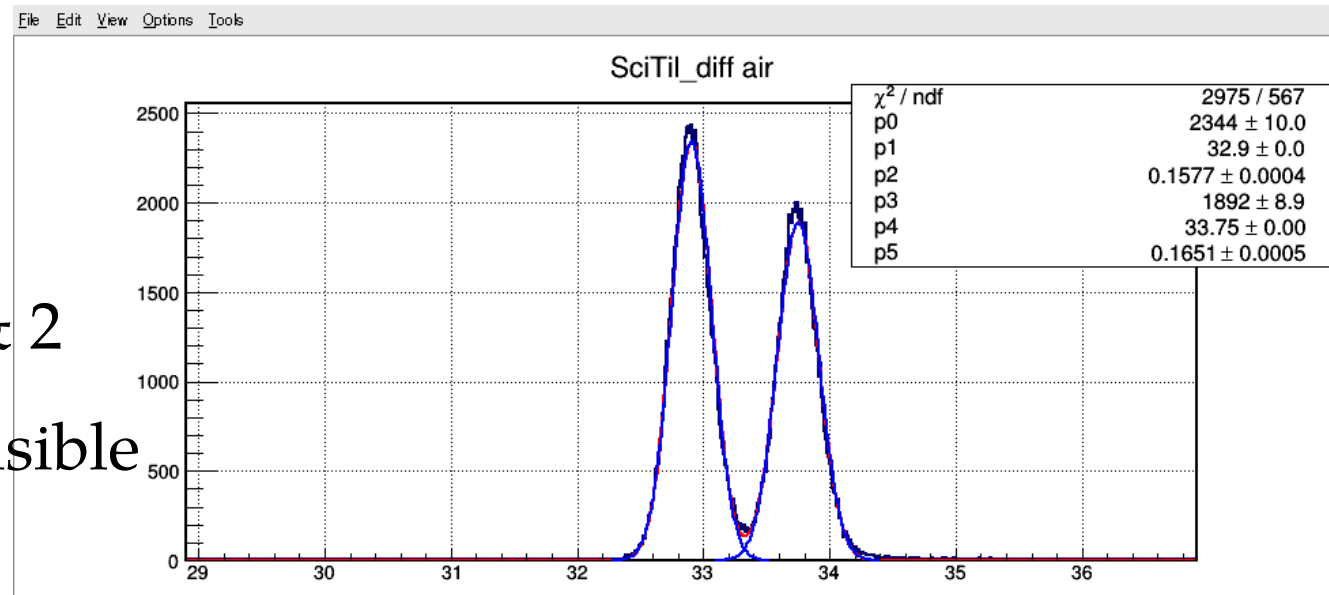


Status CERN Data Analysis

- Data from DIRC CERN Beamtime 2018
- 3 SciTil stations
 - Setup next to the MCPs
 - 1 in front two in the back
 - 32700 mm apart
 - ~ expected time difference of 110 ns
 - observed of ~ 65 ns
- Hamamatsu, Ketek & AdvanSiD SiPMs
- Tested 6xAdvanSiD sensor board
- Tested SciTil response to incident angle
- No results yet

beam_18223221520.hld

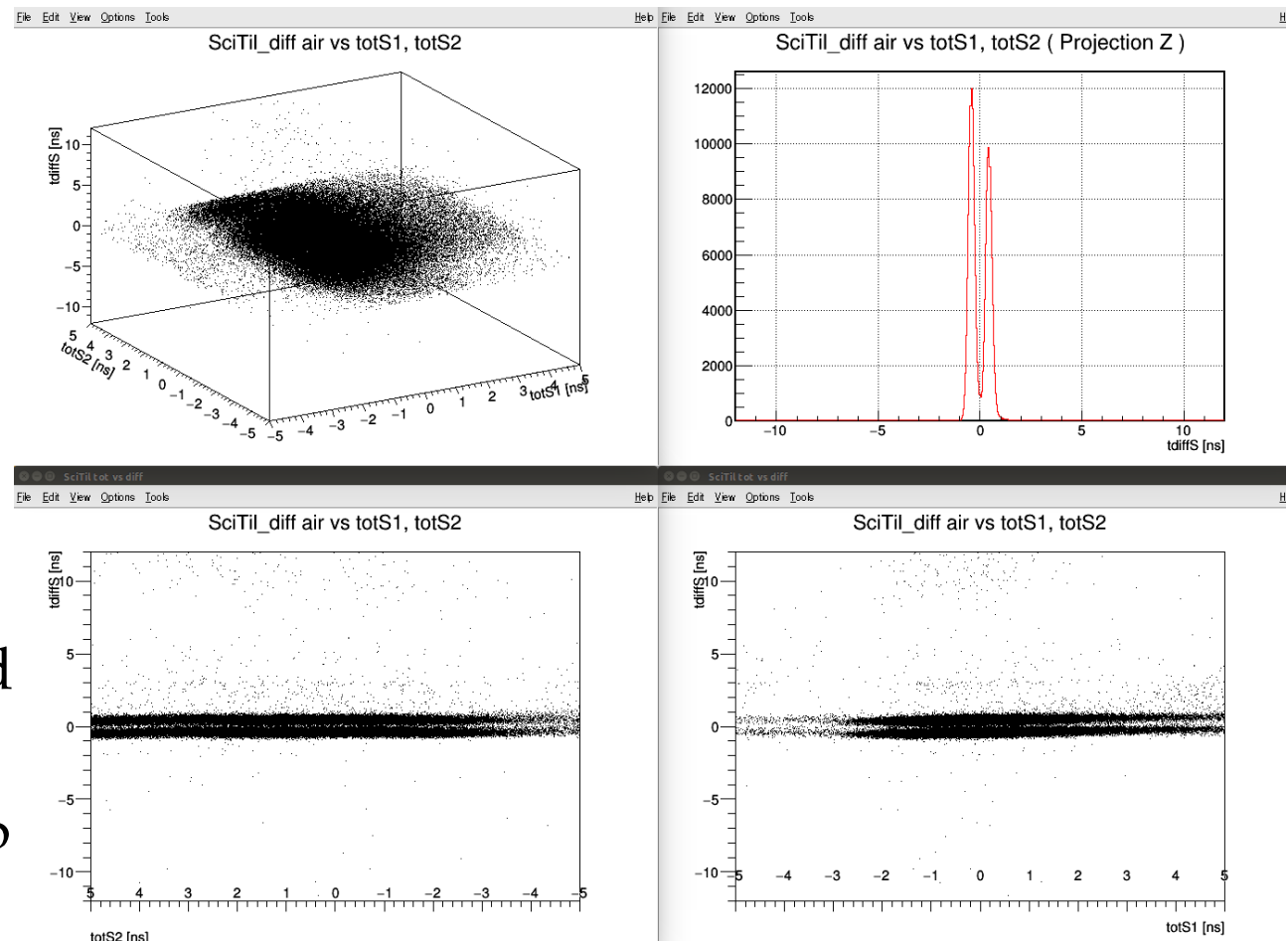
- 7 GeV/c data used
- Time Difference
between station 1 & 2
- Two particles are visible
 - Pions & Kaons



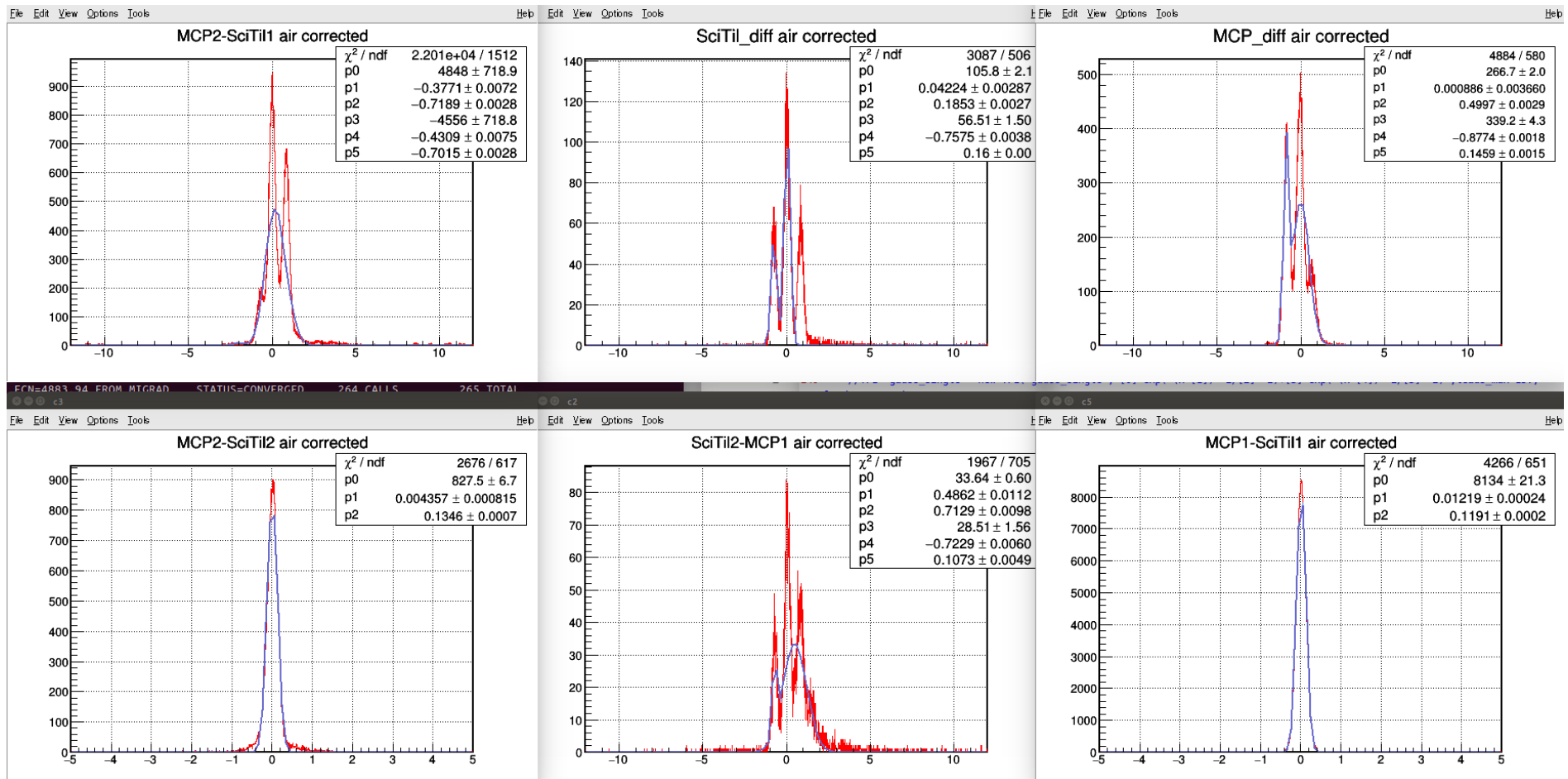
- Sigma 1 = 157 ps Sigma 2 = 165 ps
- Uncorrected time resolutions

beam_18223221520.hld

- Preparation for the data correction
- Each measurement sorted for the tot response of the stations 1 & 2
- Every point in the tot plane is then fitted and the distribution plotted in the next step

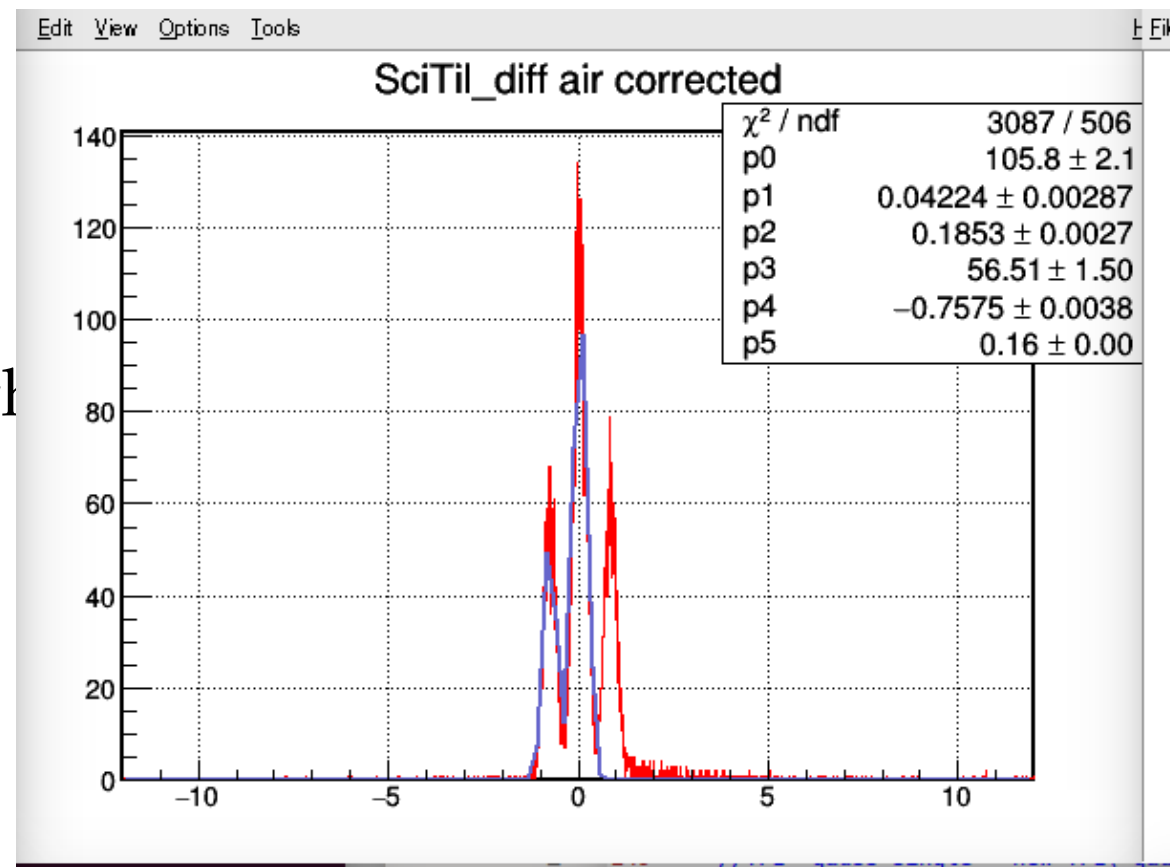


beam_18223221520.hld

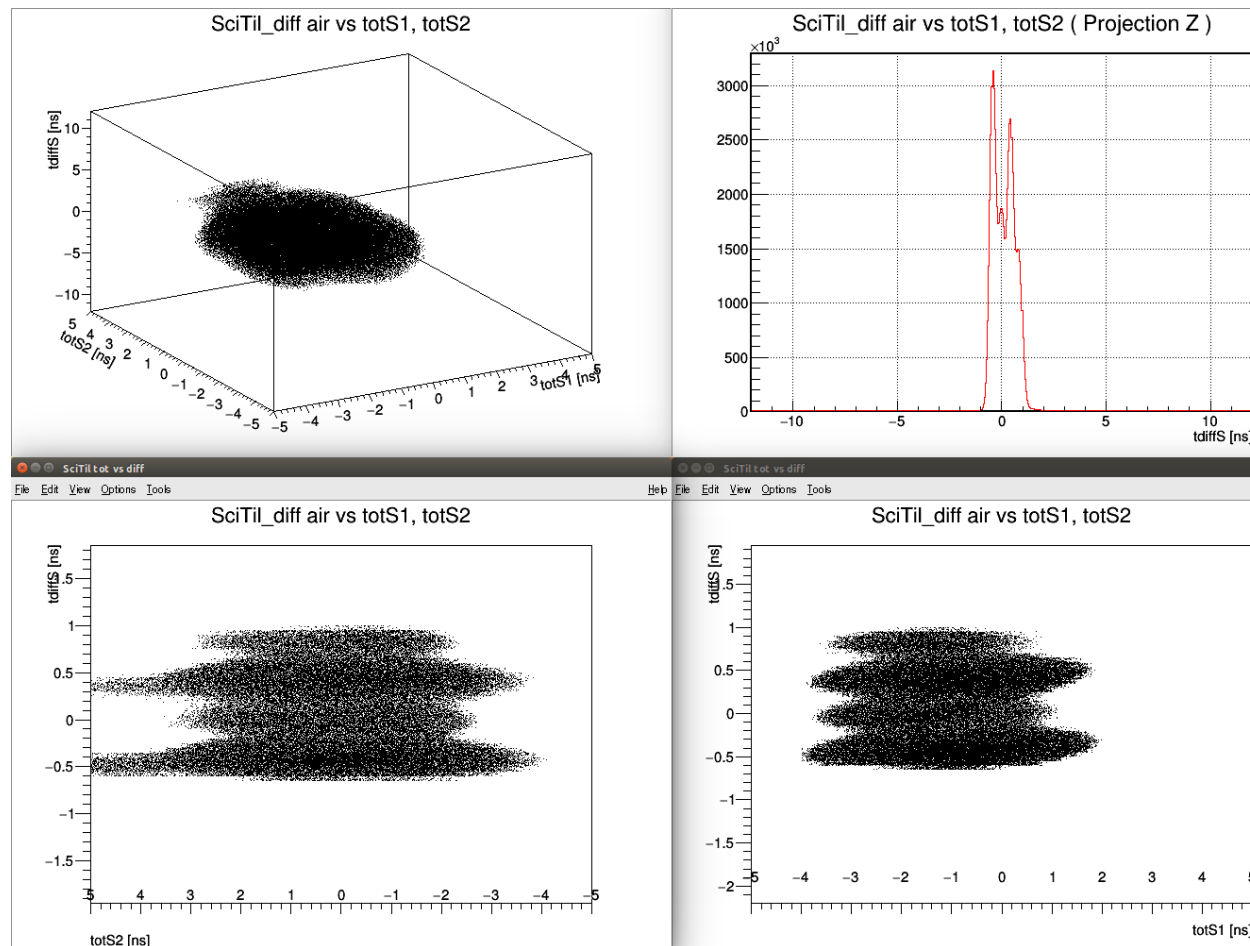


beam_18223221520.hld

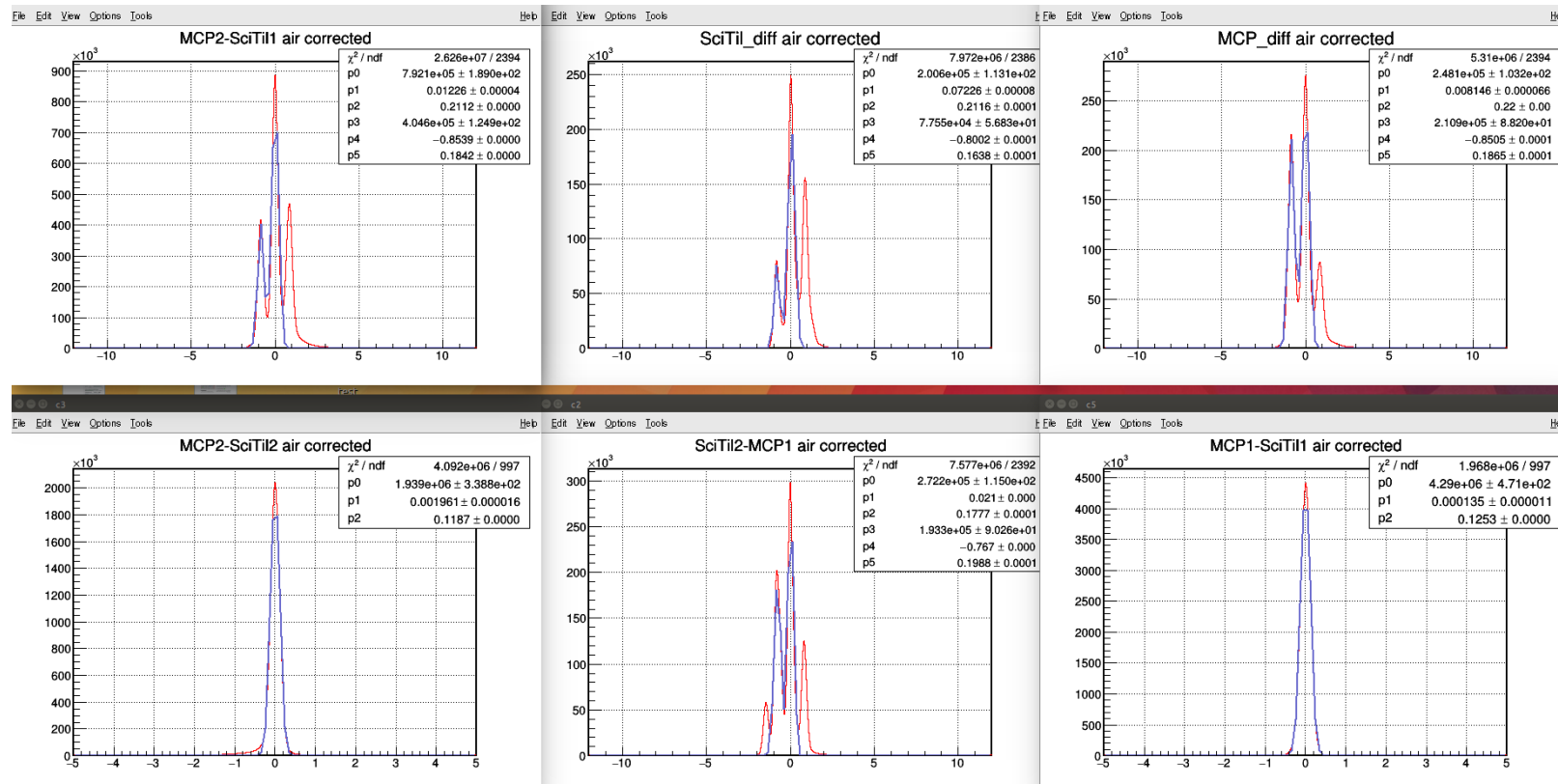
- “corrected” data
- Showing an additional unexpected peak
- The time resolution for the corrected distribution is worse / the same as the uncorrected data
sigma 1 = 185 ps
sigma 2 = 160 ps



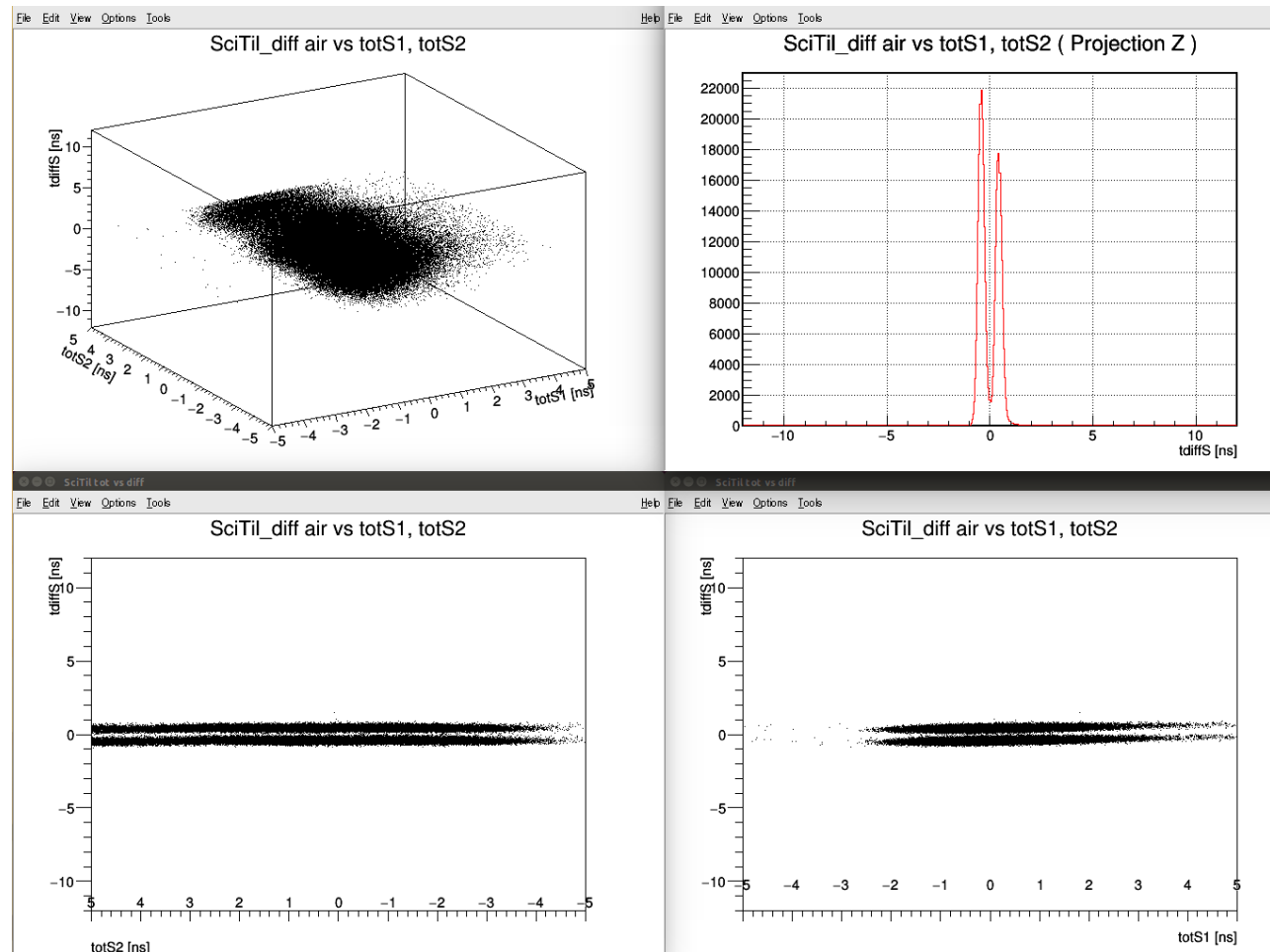
7 GeV Data Analysis2



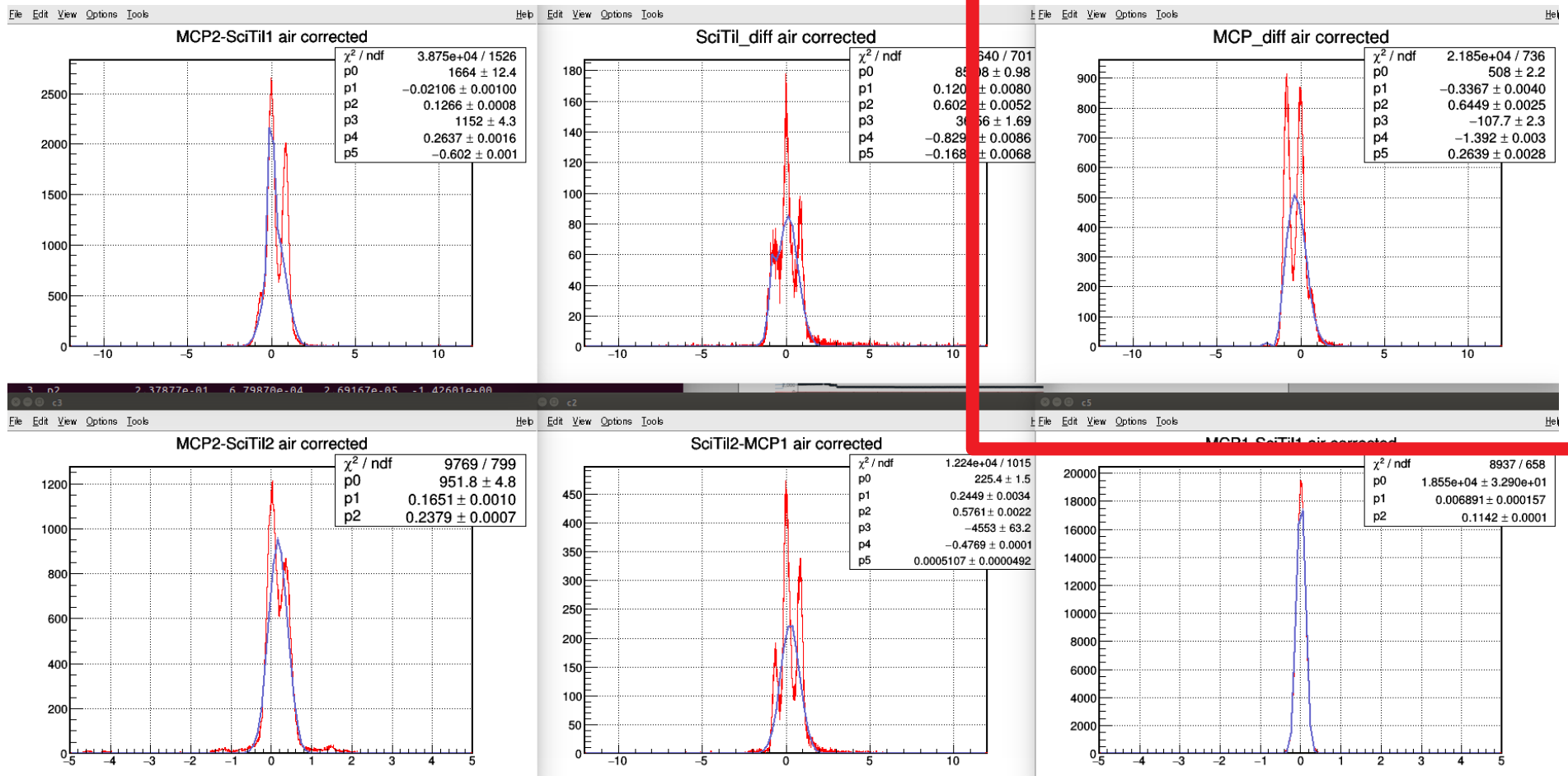
7 GeV Data Analysis3



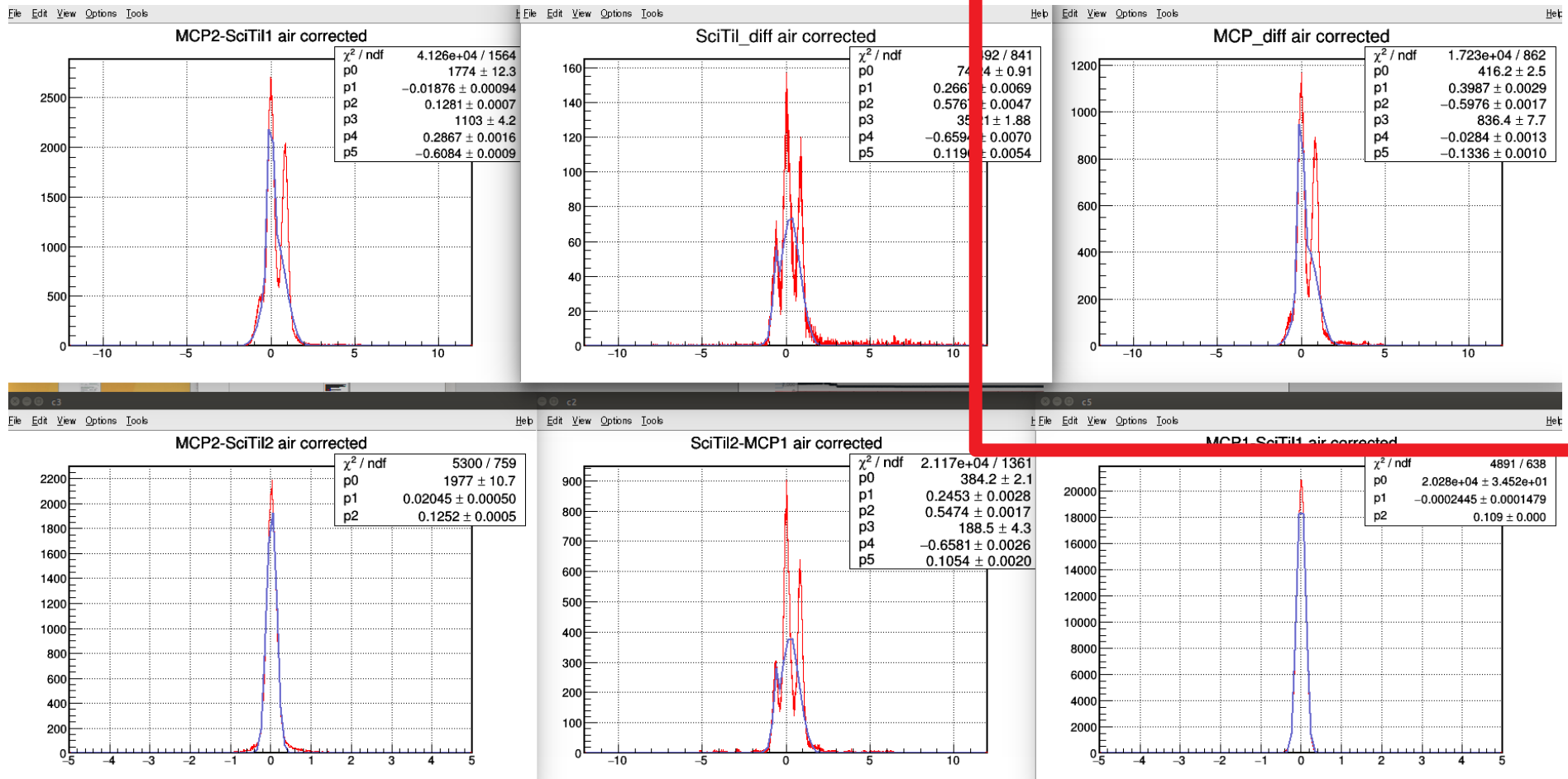
beam_18223214220.hld



beam_18223214220.hld



beam_18223215820.hld







Logbook Entry

MCP-TOF1 is significantly worse in this run (215ps w/o walk correction, 10% worse).

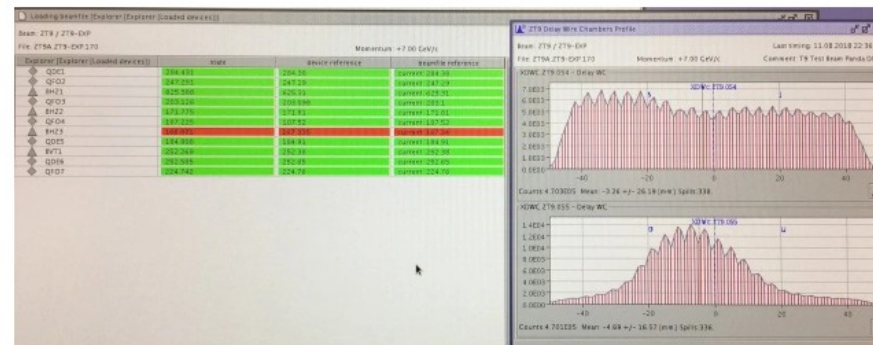
Decide to **return to old MCP-TOF1 threshold** and live with the 100kHz+ noise rate.

beam_18223214220.hld

beam_18223215820.hld

beam_18223221520.hld

Since TOF timing still seems to be difficult to understand, take a test run with the **2017 7 GeV/c beam file**.

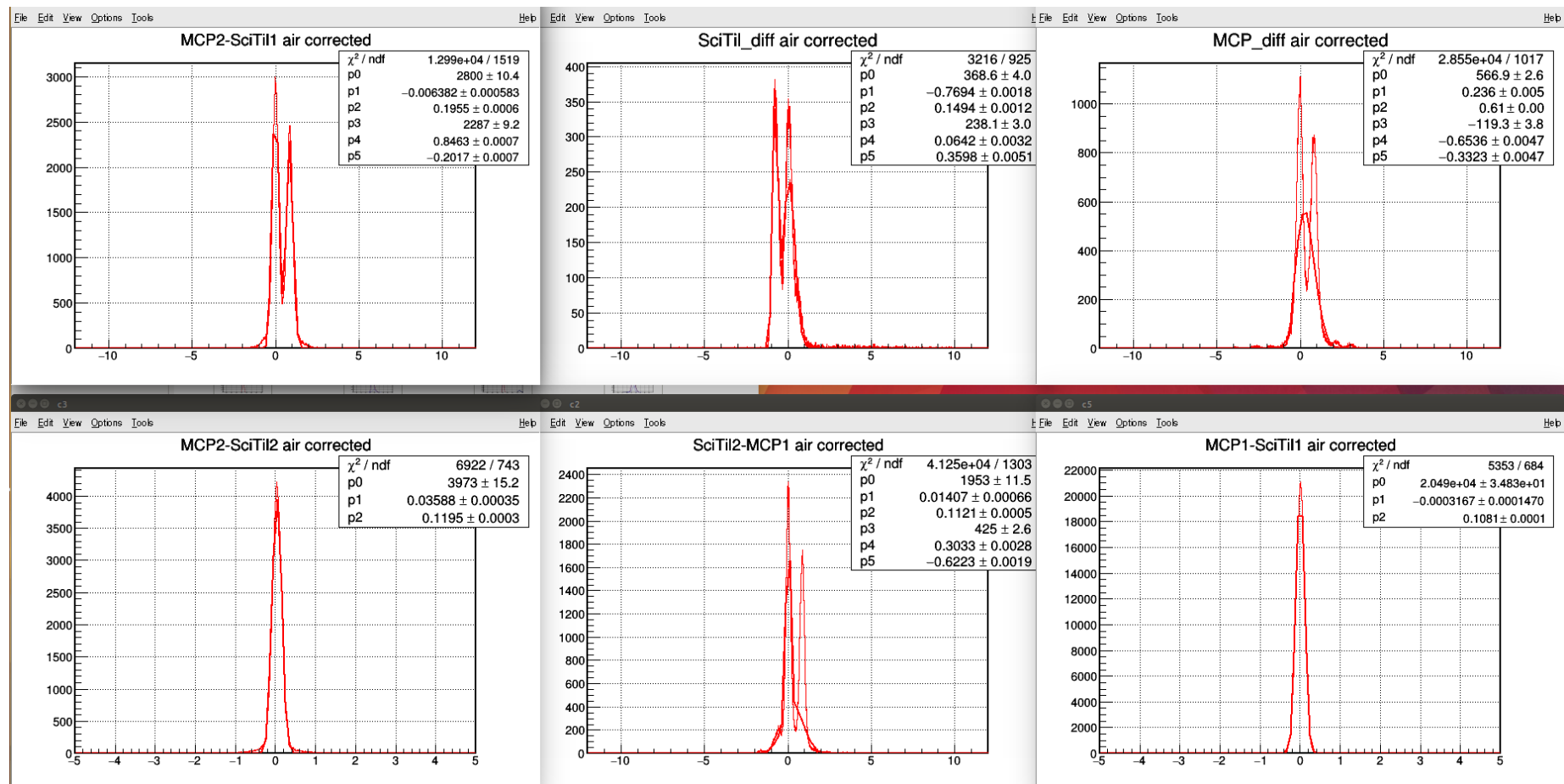


beam_18223222546.hld

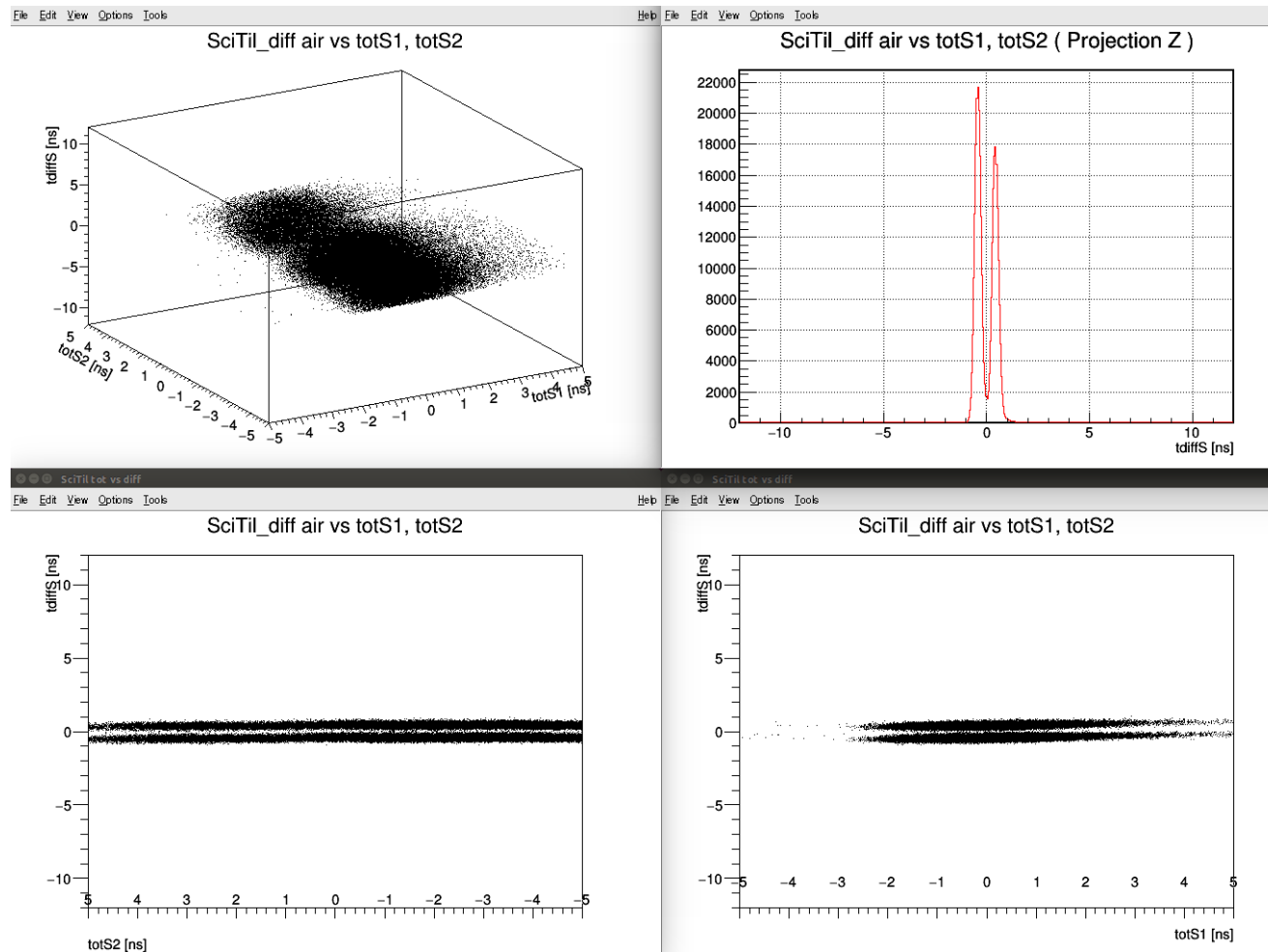
beam_18223224022.hld (end for EDD access)

beam_18223224730.hld

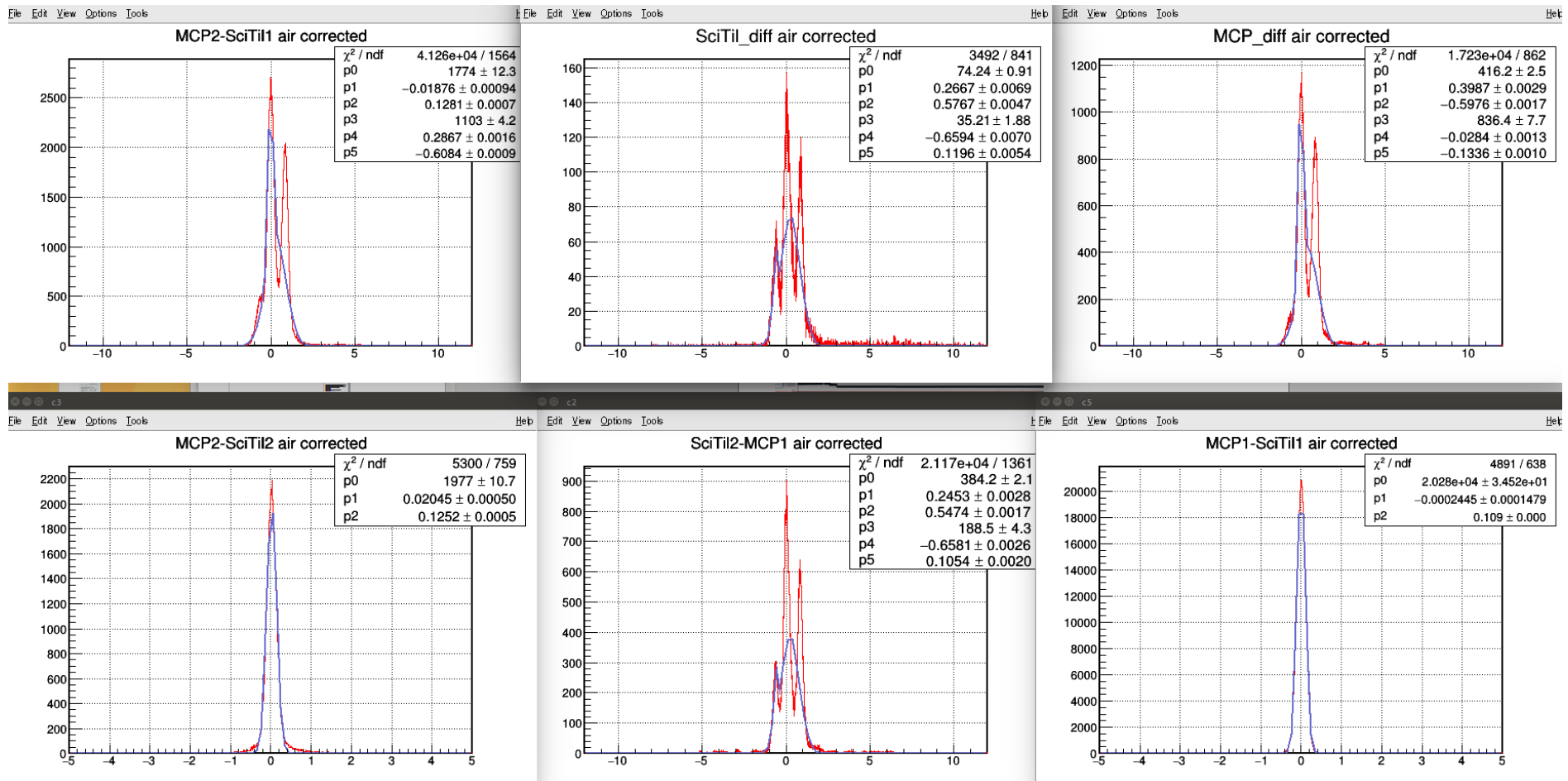
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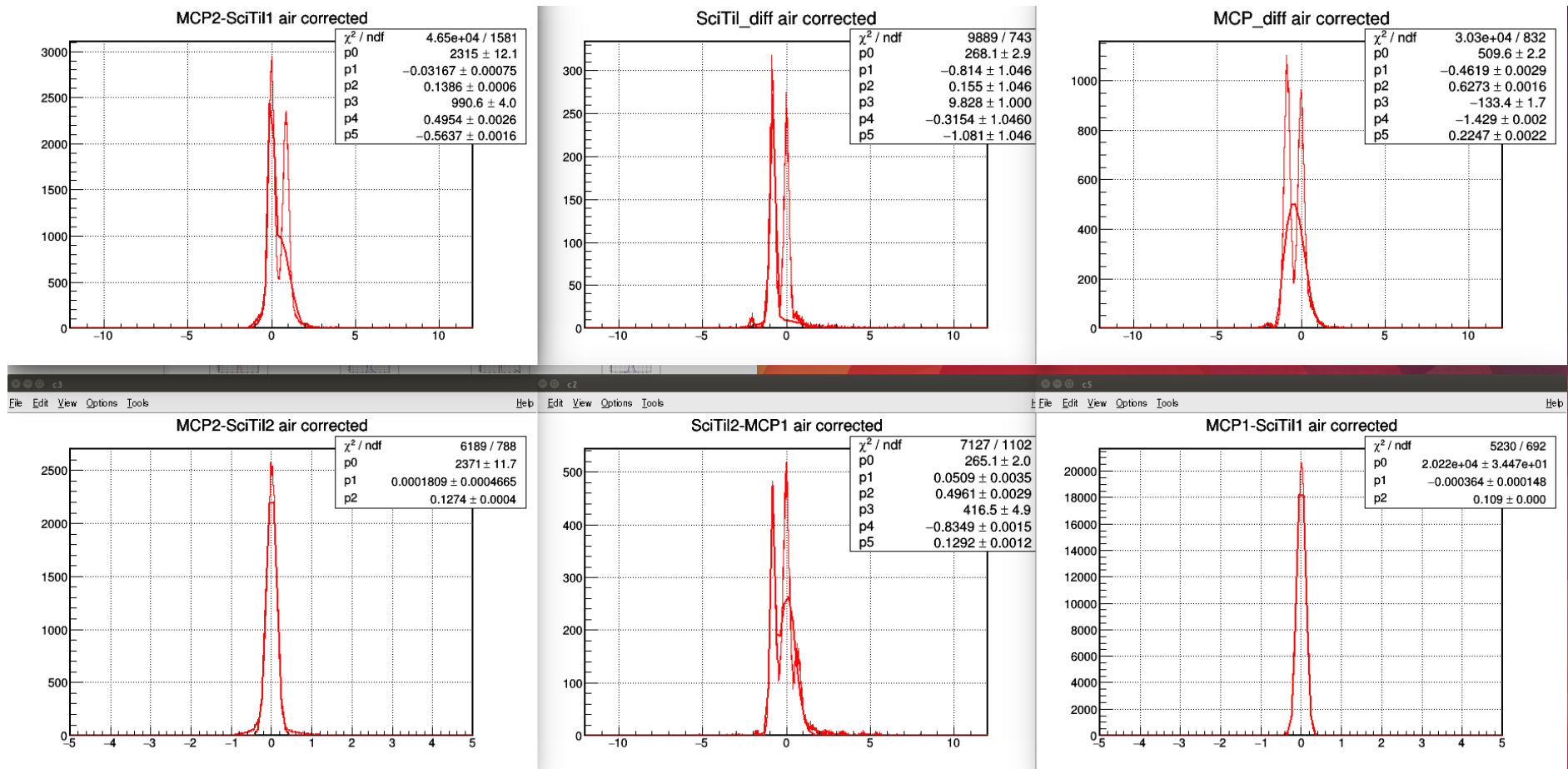
beam_18223215820.hld



beam_18223215820.hld



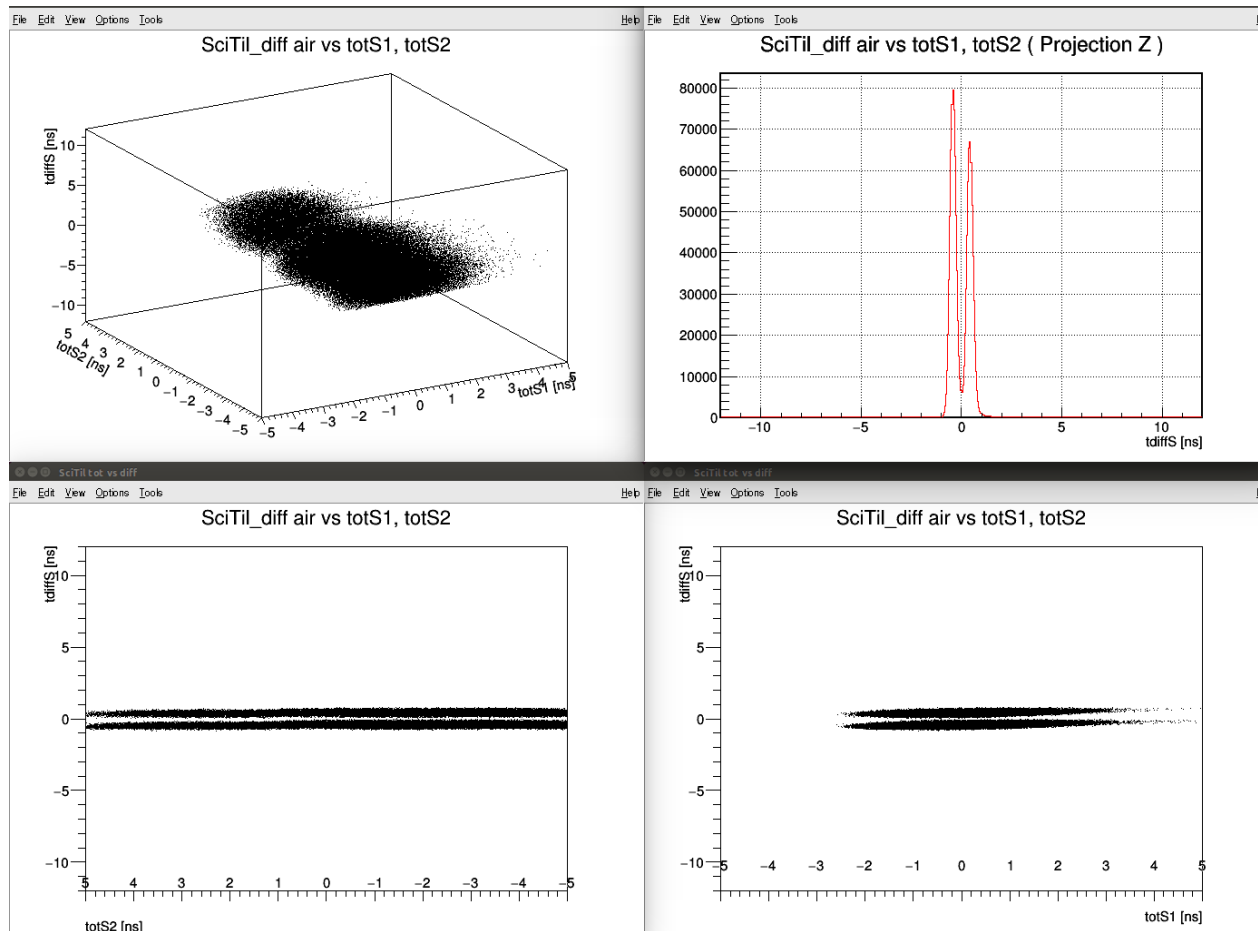
beam_18223215820.hld



Differences between files

- Shift of peaks in
MCP_dif air corrected
from 0 and above to 0 and
below
- File [beam_18223221520.hld](#)
has 3 peaks instead of 2
(pion, Kaon) in
SciTil_diff air corrected

7 GeV Data of the 11th of August



7 GeV Data of the 11th of August

