



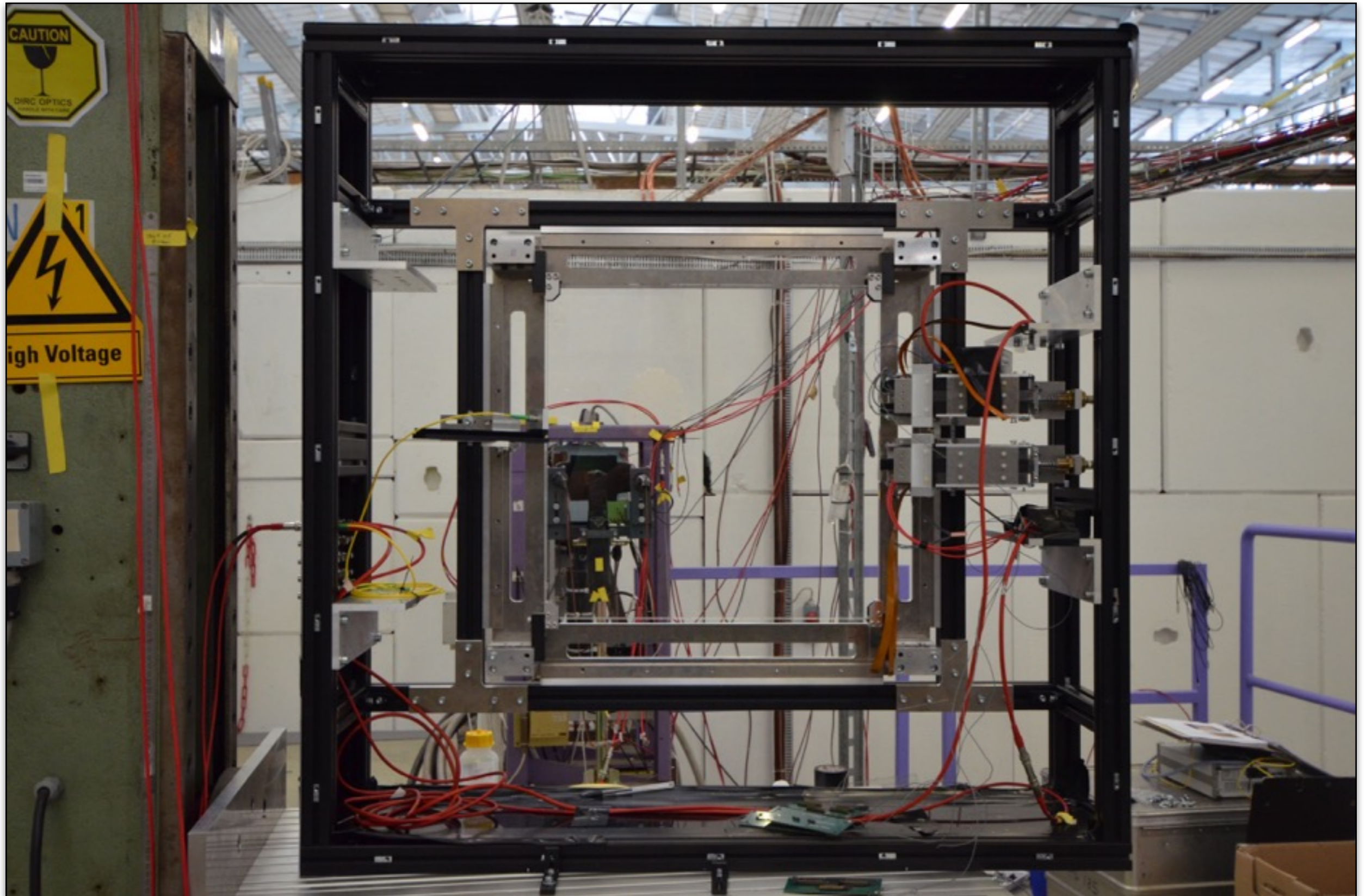
Status Testbeam Analysis

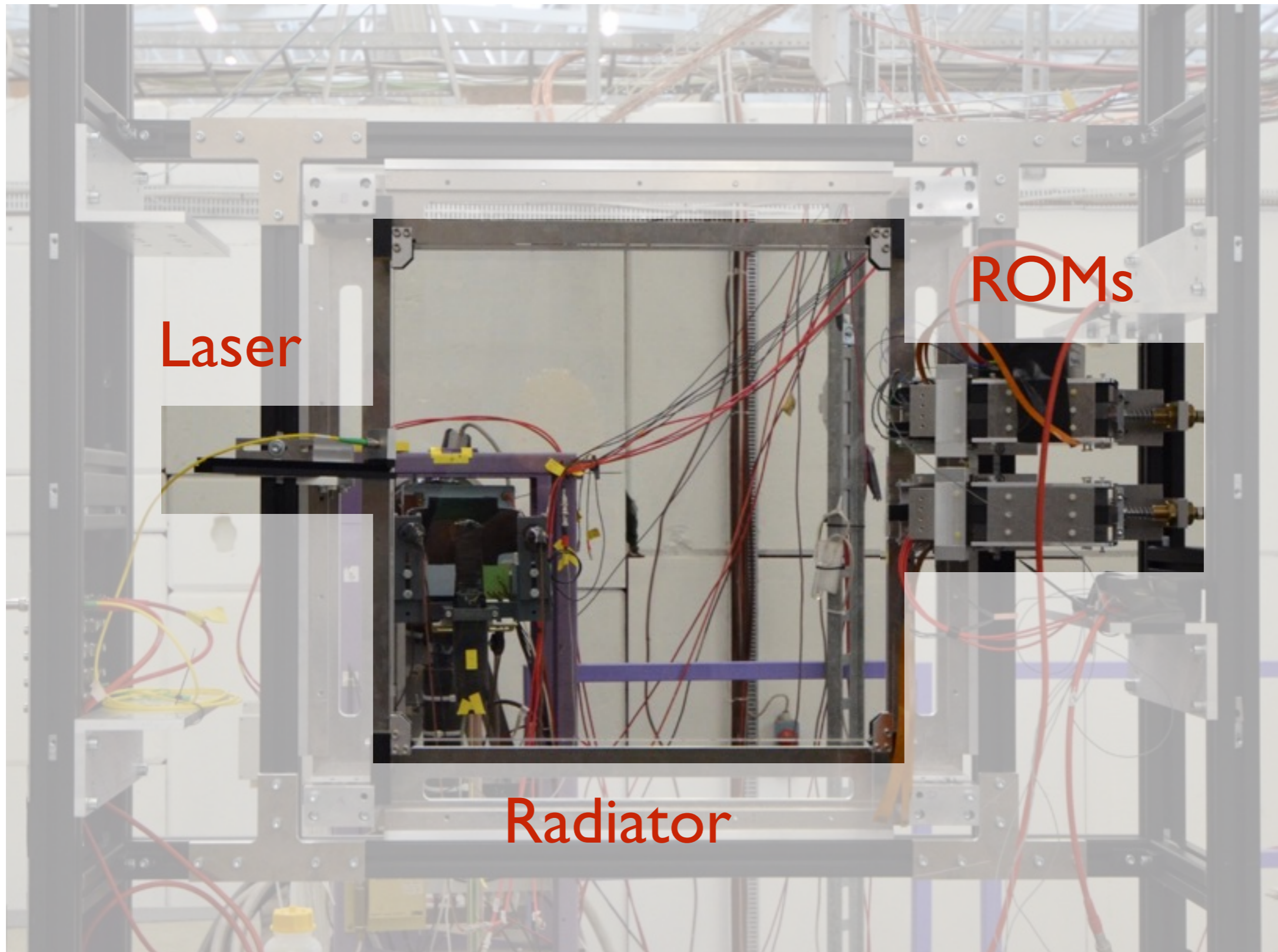
Erik Etzelmüller, Klim Biguenko, Michael Düren, Avetik Hayrapetyan, Kristof Kreutzfeld, Julian Rieke, Mustafa Schmidt

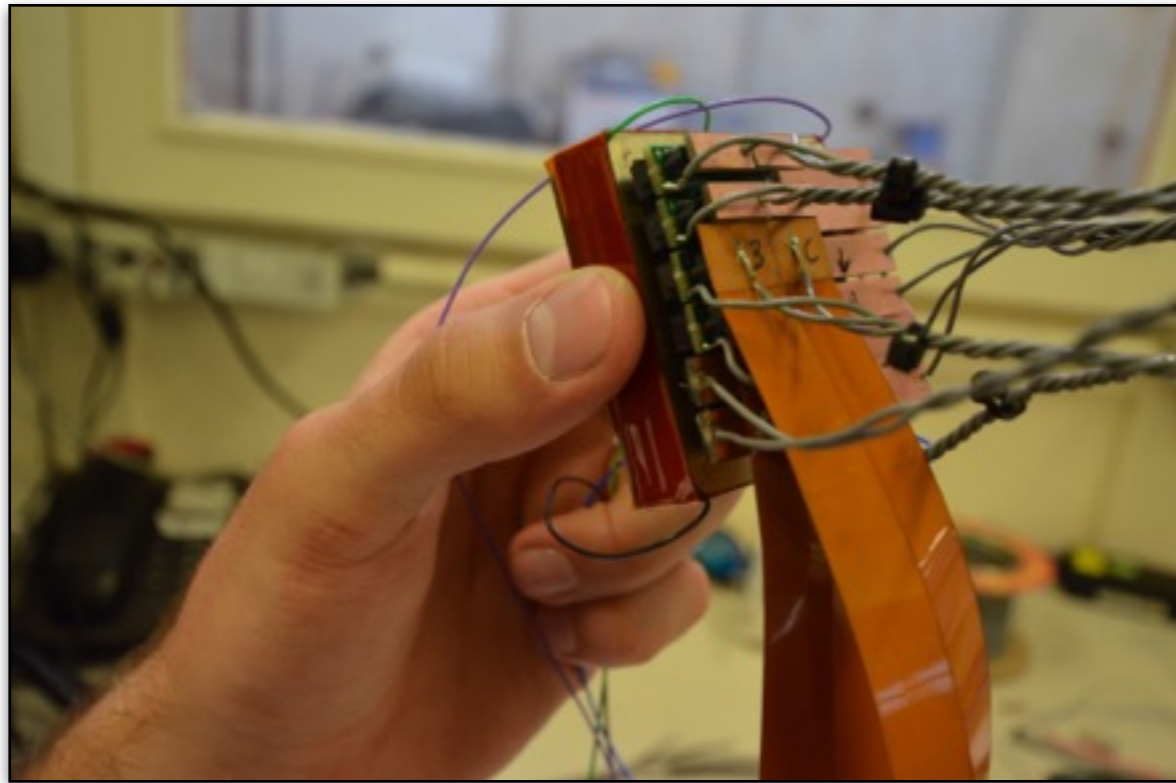
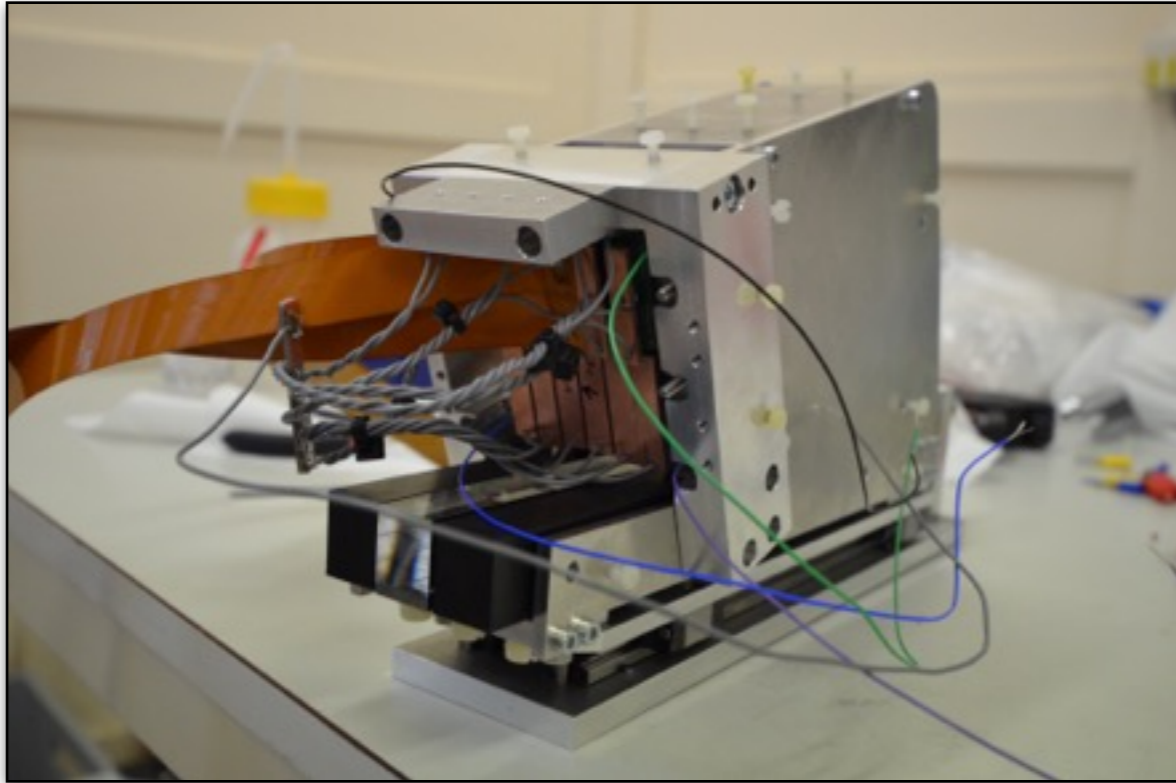
PANDA Mechanics Workshop

September 8th 2015

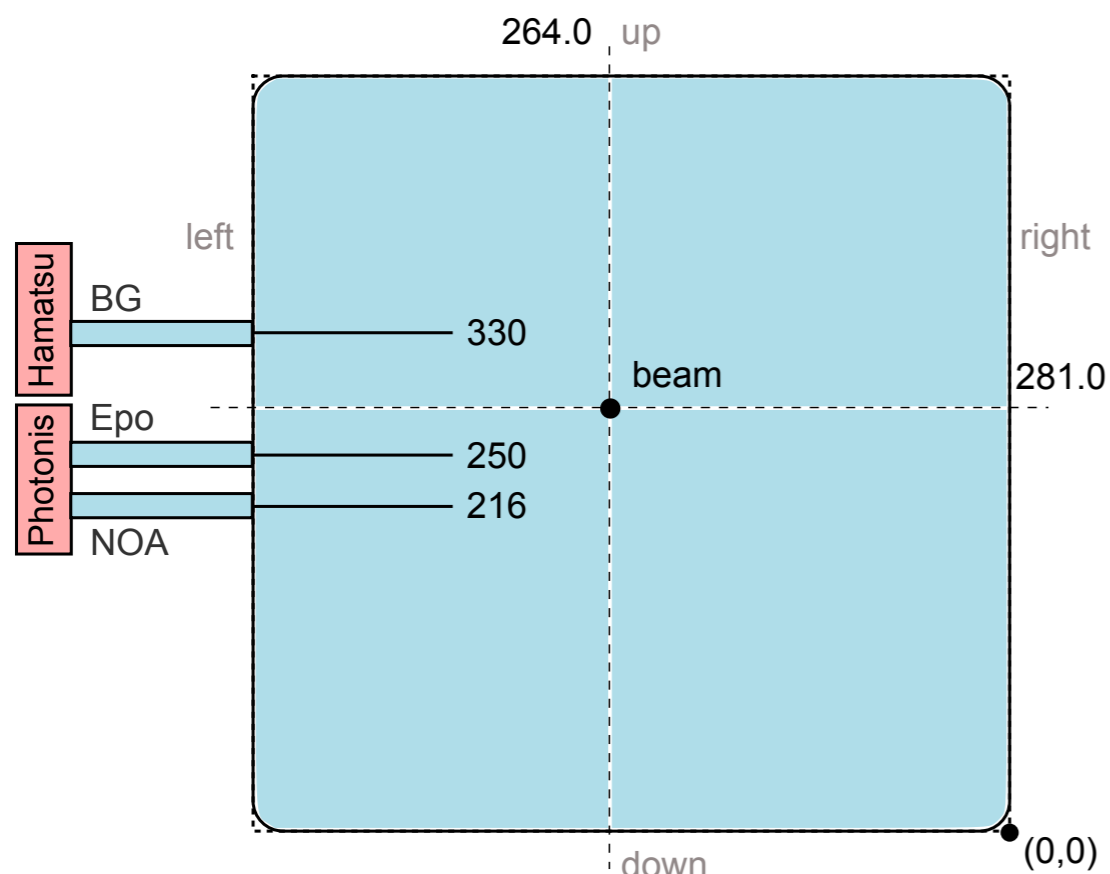
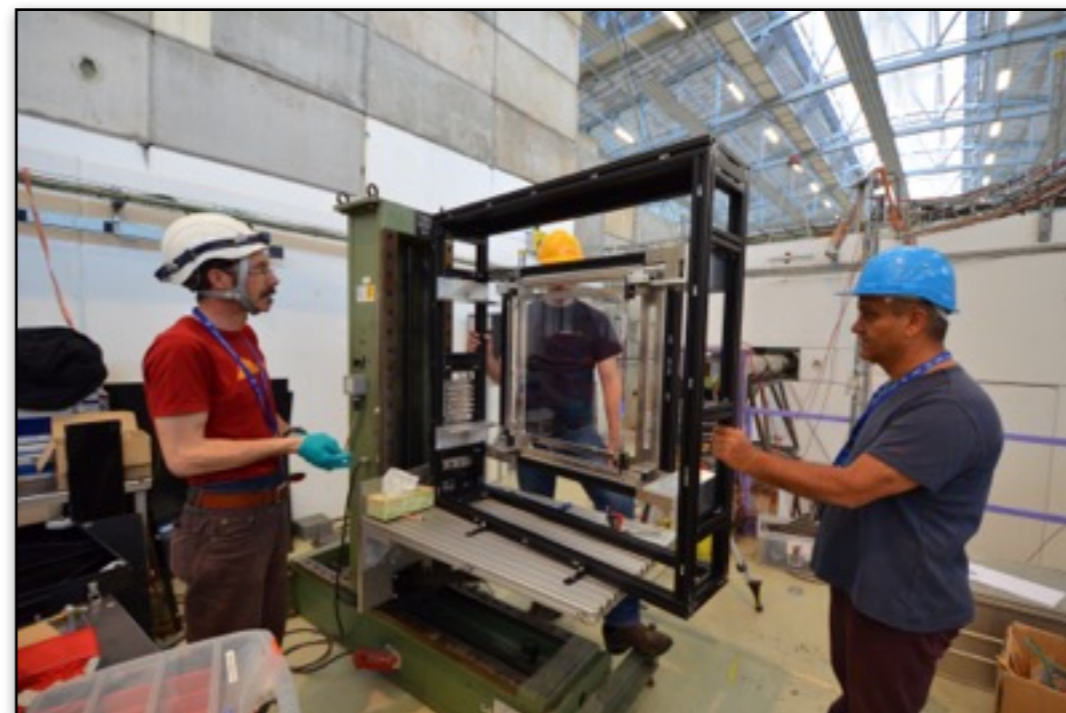
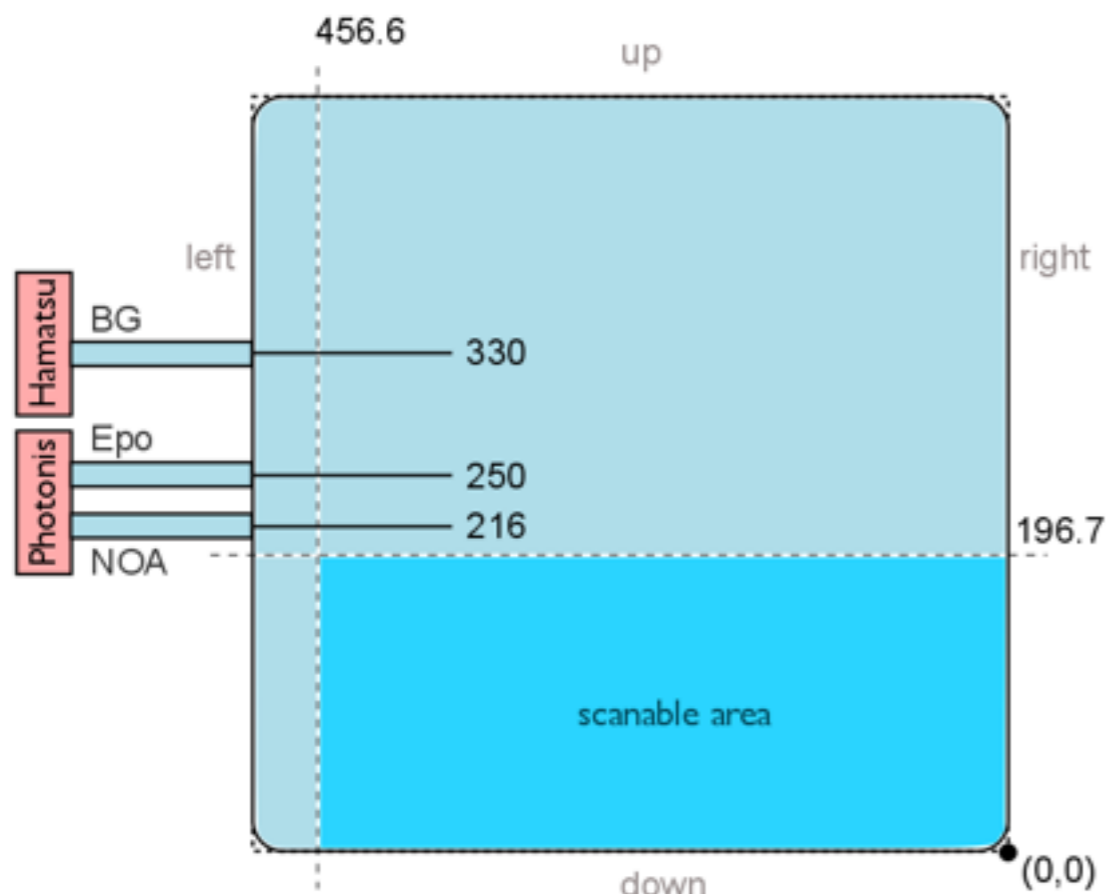
Testbeam Setup







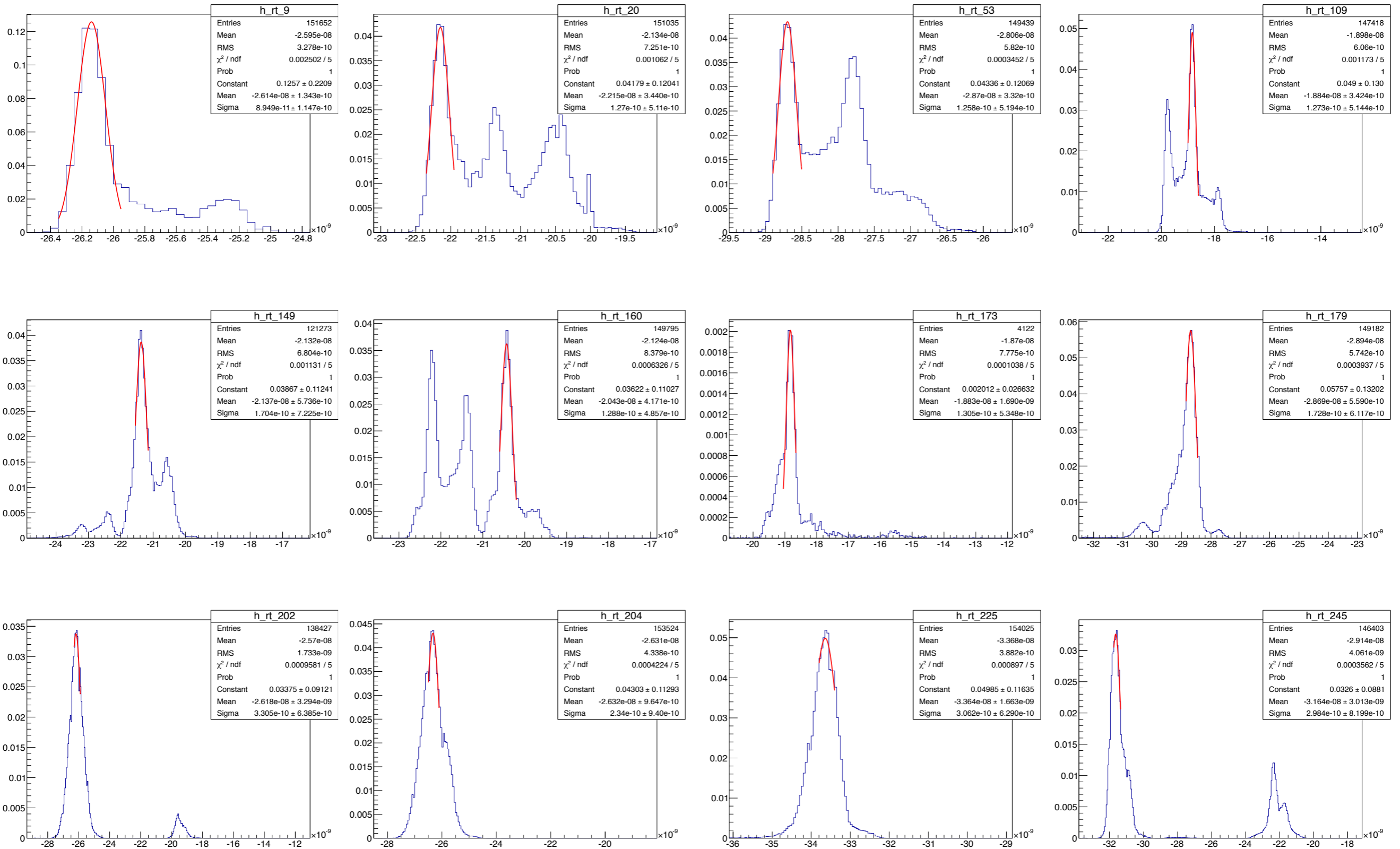
Testbeam Setup



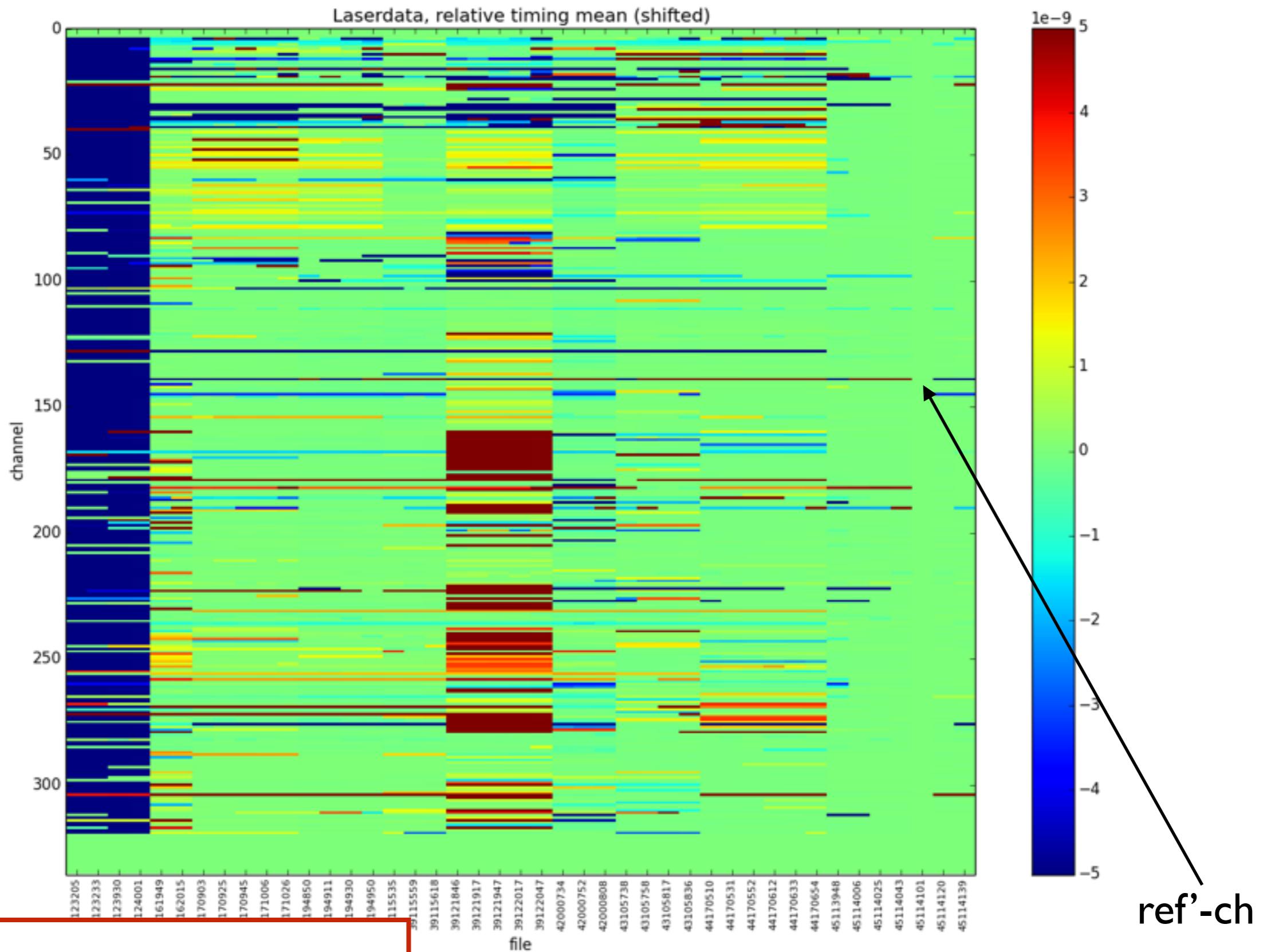
Calibration

- Get relative timing: for each channel: $t'_{ch} = t_{ch} - t_{ref}$
- Define acceptance region for coarse timing
- Reject events which come from the CTS counter
- time-resolution between 80 and 300 ps for majority of events
- Laser data relatively consistent
- t_0 can be defined for each channel
- additional channel-dependent shift can be applied

Laser data



Laser data



$$t'_{ch} = t_{ch} - t_{ref} - t_{0,ch}$$

Setup 1.1

- high statistics run at 4 GeV/c
- momentum scans 1-10 GeV/c
- γ -scans at 5 GeV/c

Setup 1.2

- HV-scans at 5 GeV/c
- angle-scans at 10 GeV/c
- angle-scans at 5 GeV/c

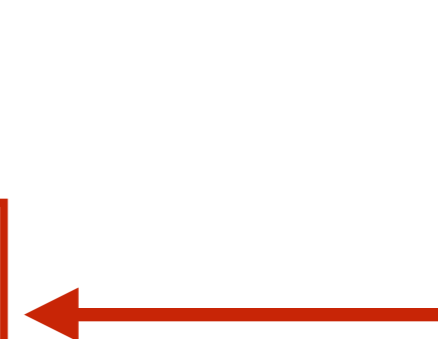
Setup 1.1

- high statistics run at 4 GeV/c
- momentum scans 1-10 GeV/c
- γ -scans at 5 GeV/c

Setup 1.2

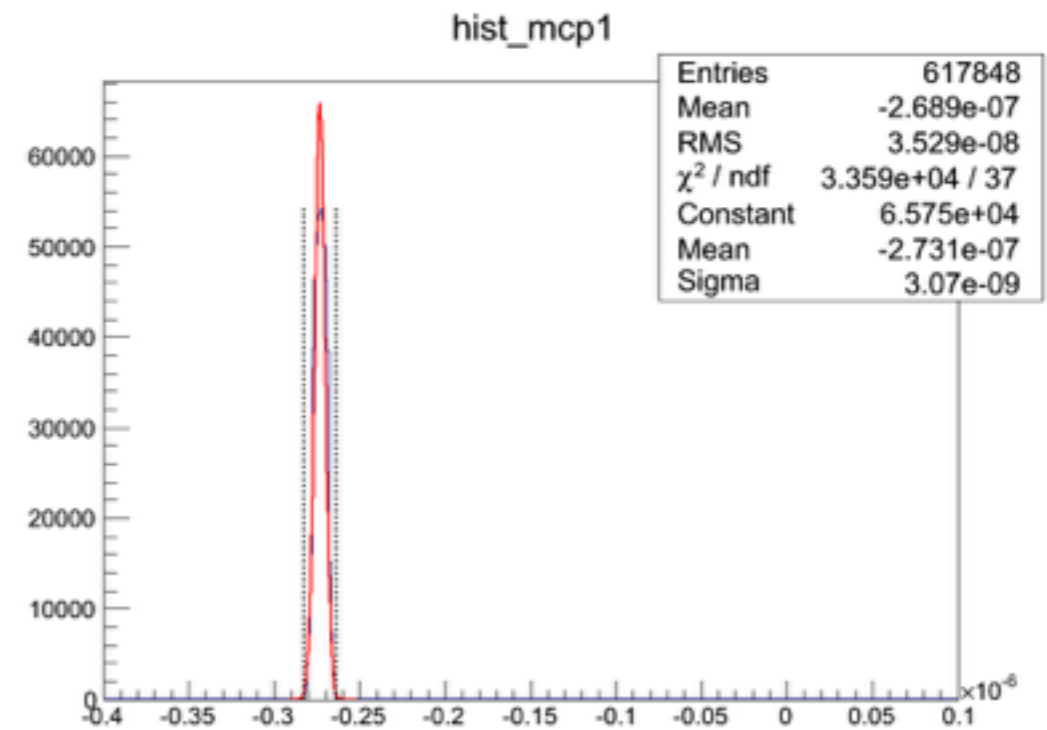
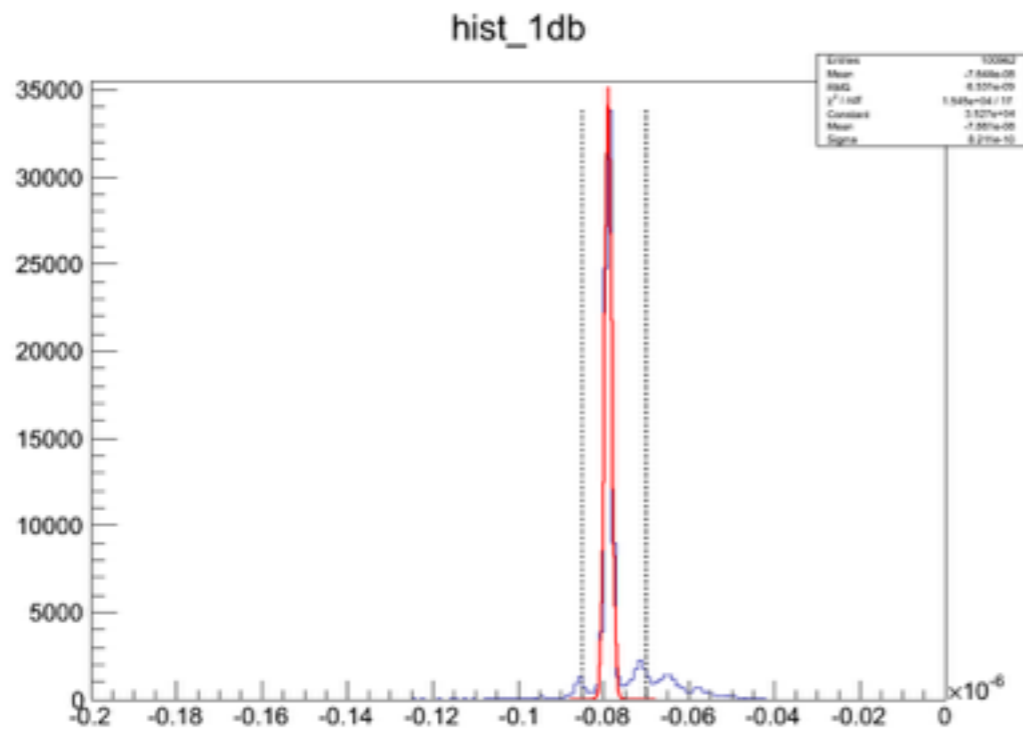
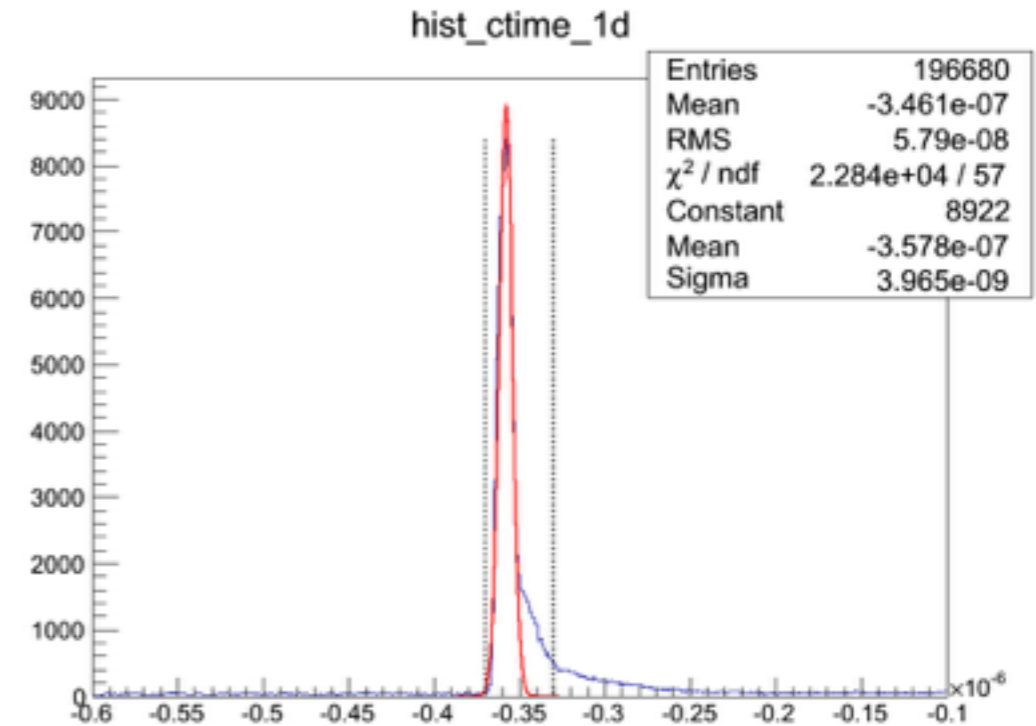
- HV-scans at 5 GeV/c
- angle-scans at 10 GeV/c
- angle-scans at 5 GeV/c

first look at



Applied cuts

- TOF-MCP I time cut (19 ns)
- Coarse time cut (40 ns)
- Relative time cut (15 ns)



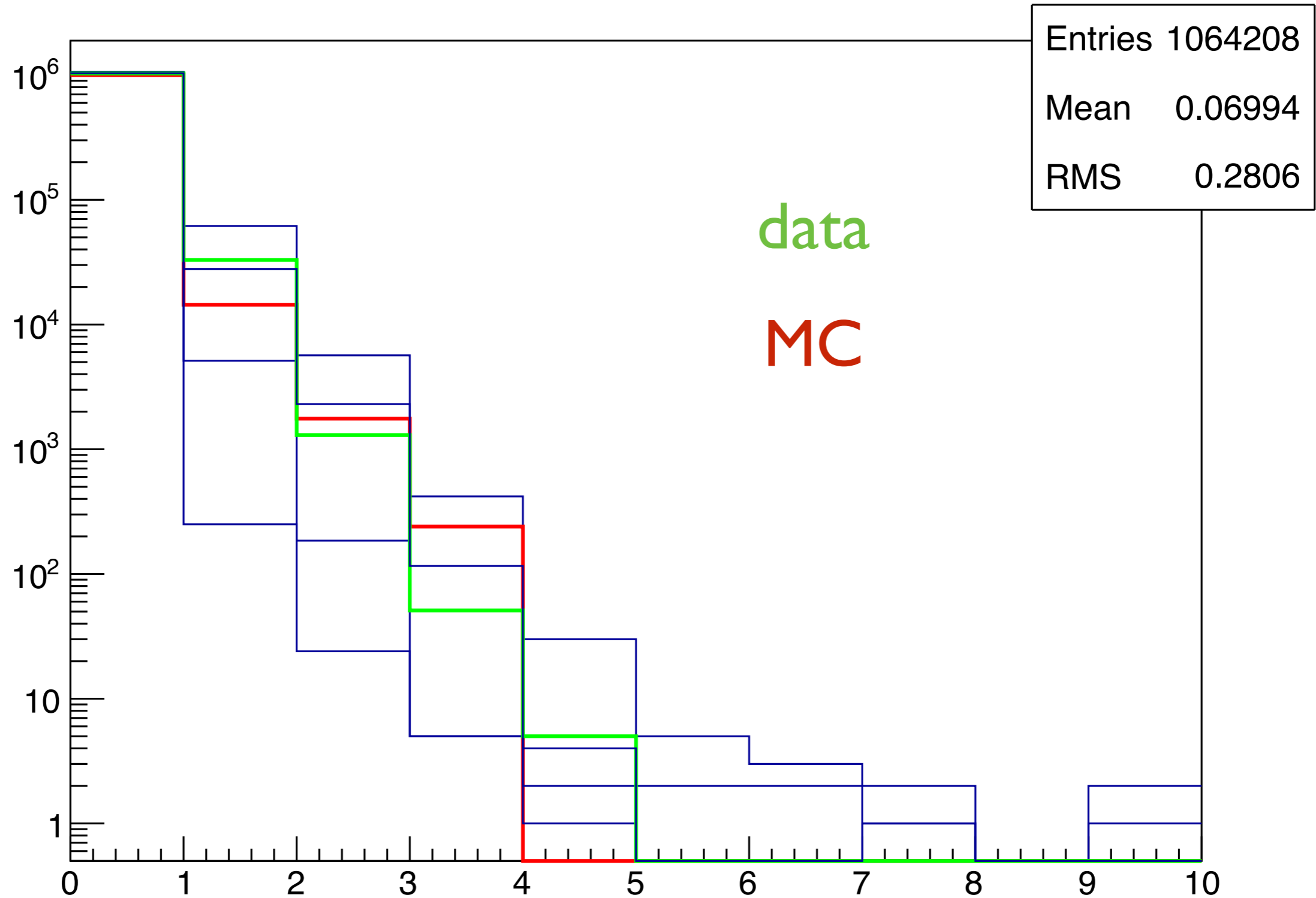
Normalization of data

- Normalize to number of TOF-MCP I events
- correct for background in coarse timing

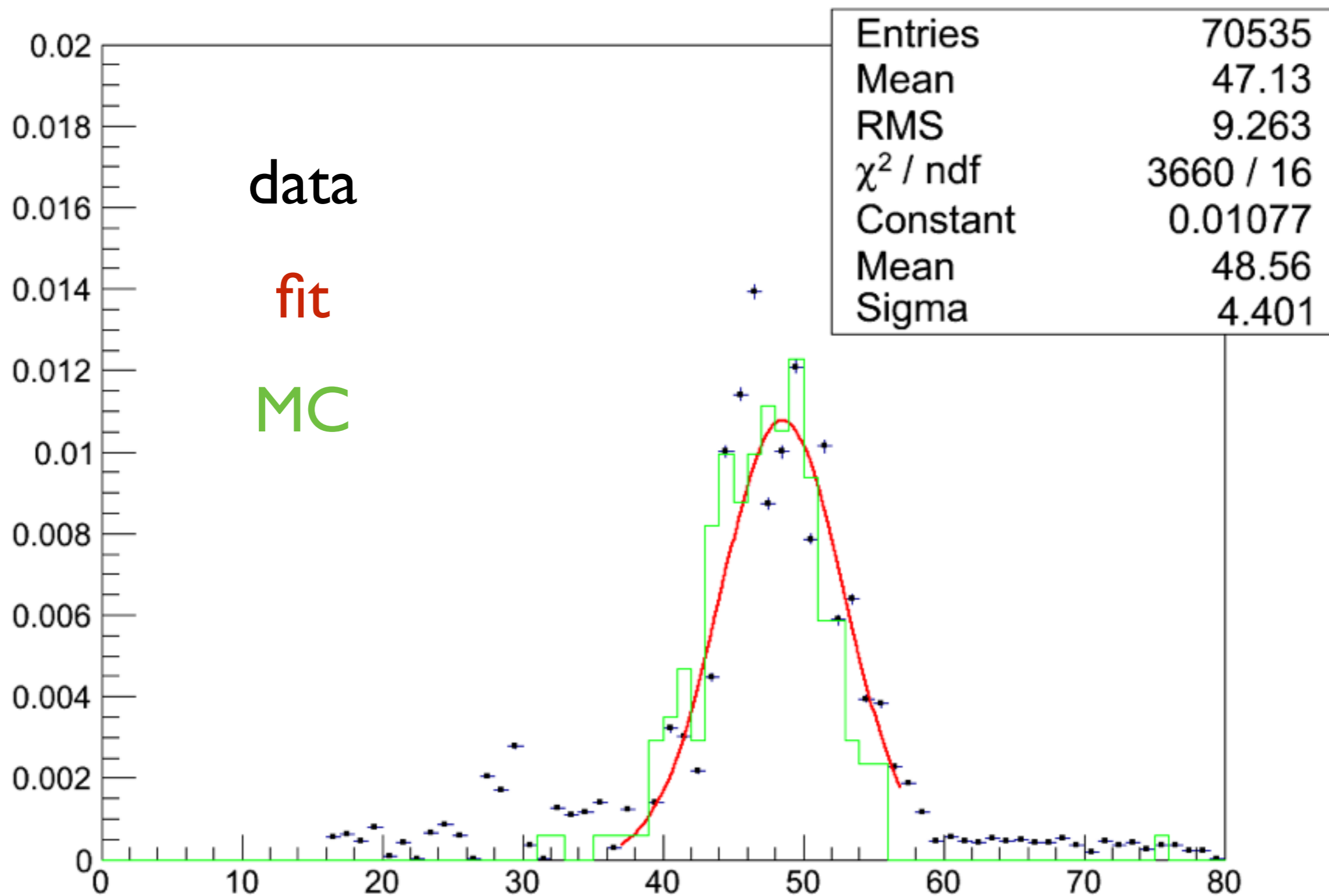
Normalization of Monte-Carlo

- Take only one hit per pixel
- Scale down by 65 %

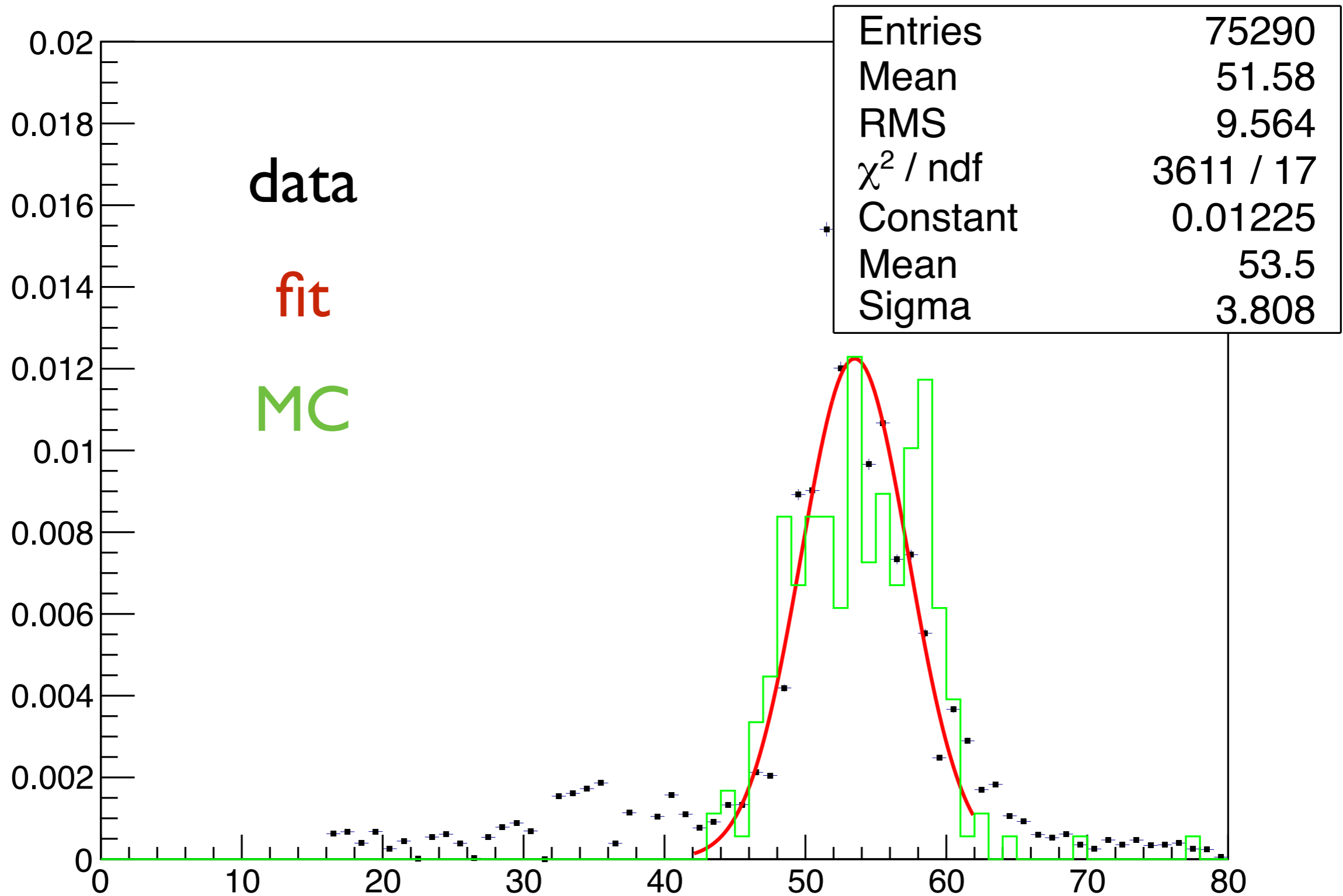
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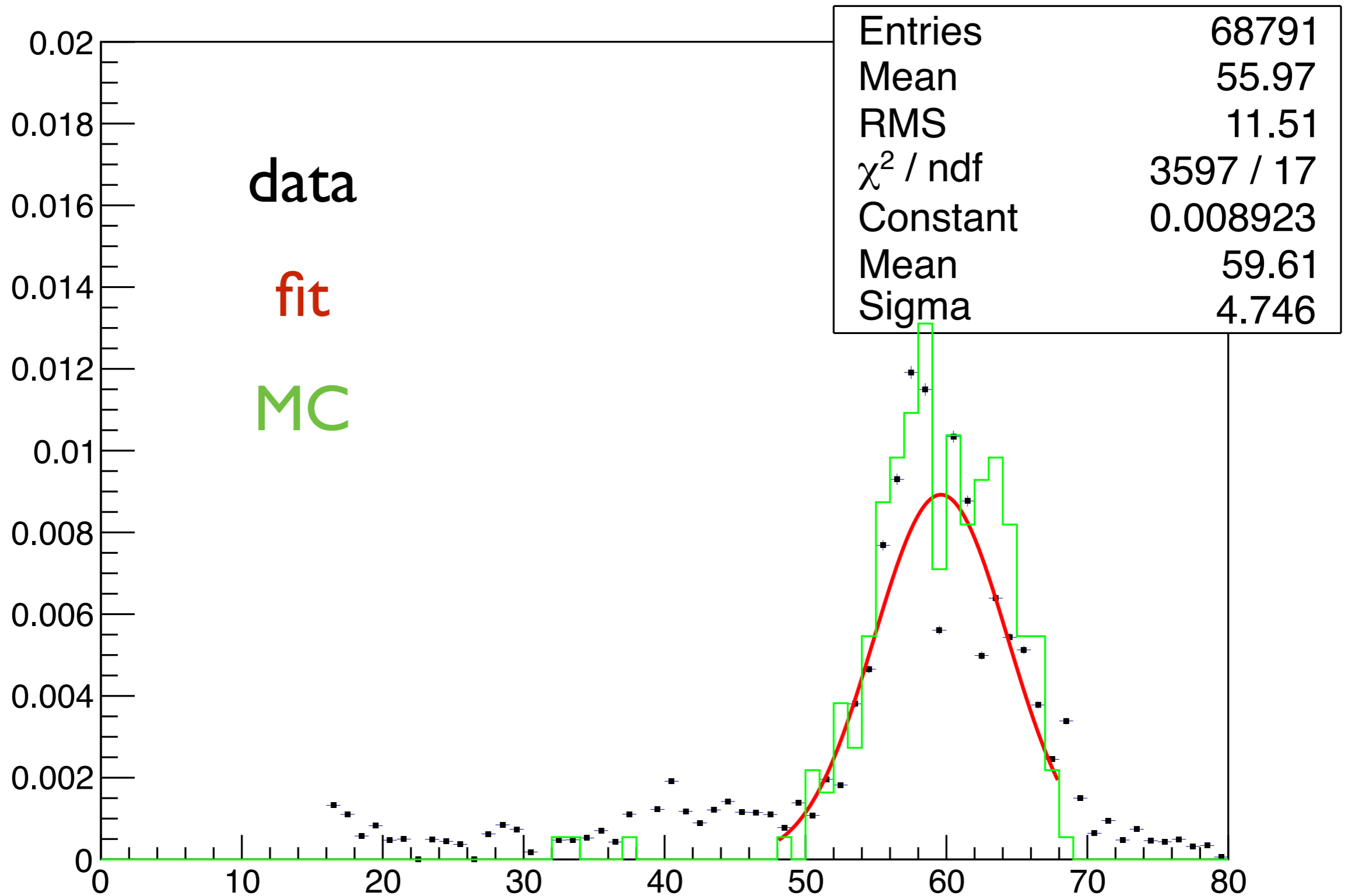
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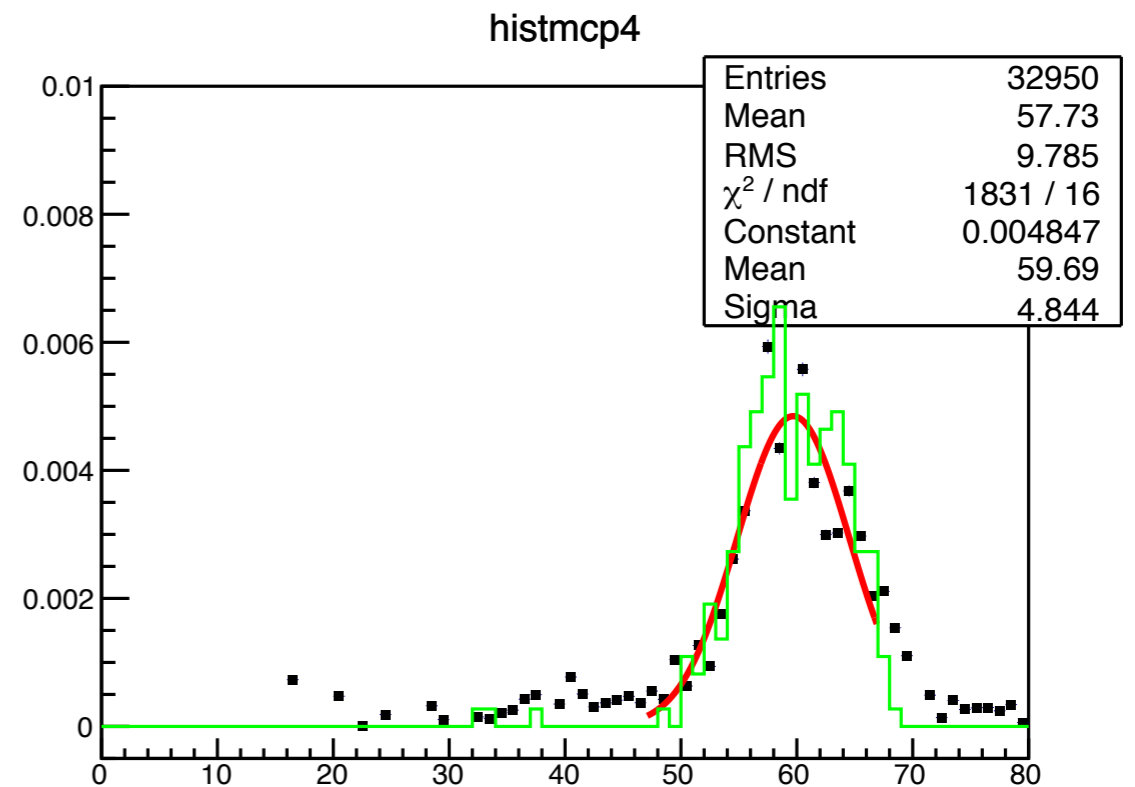
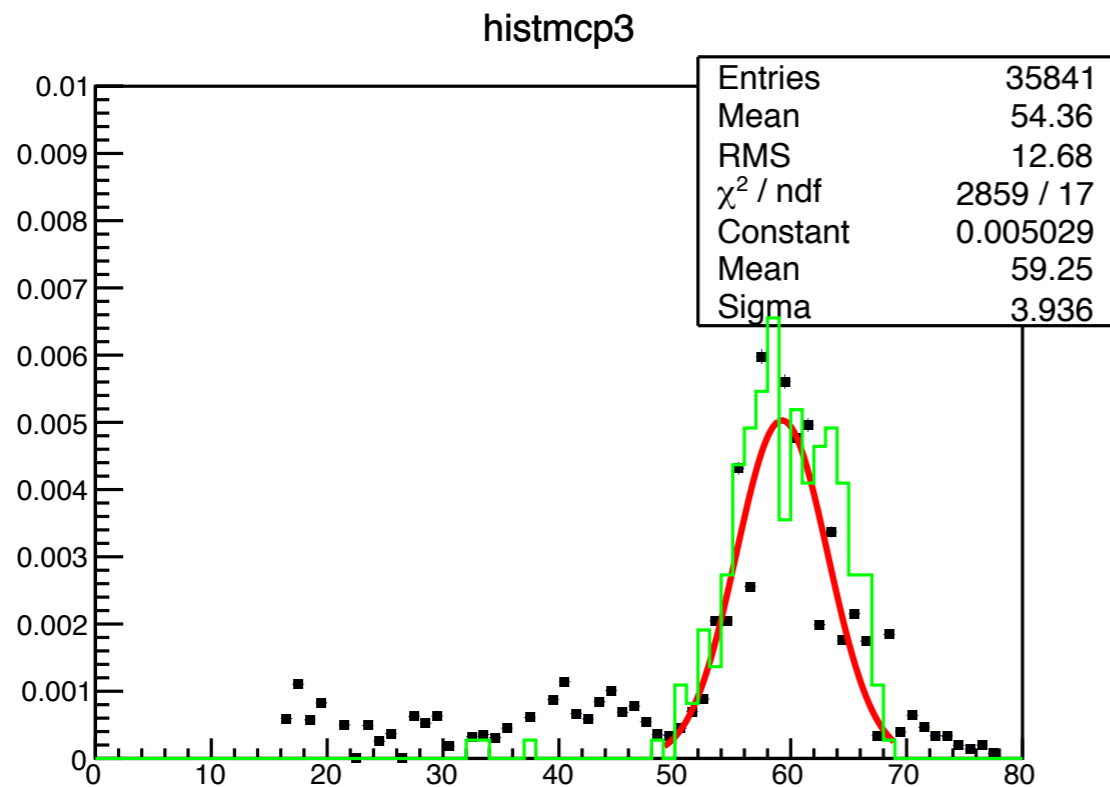
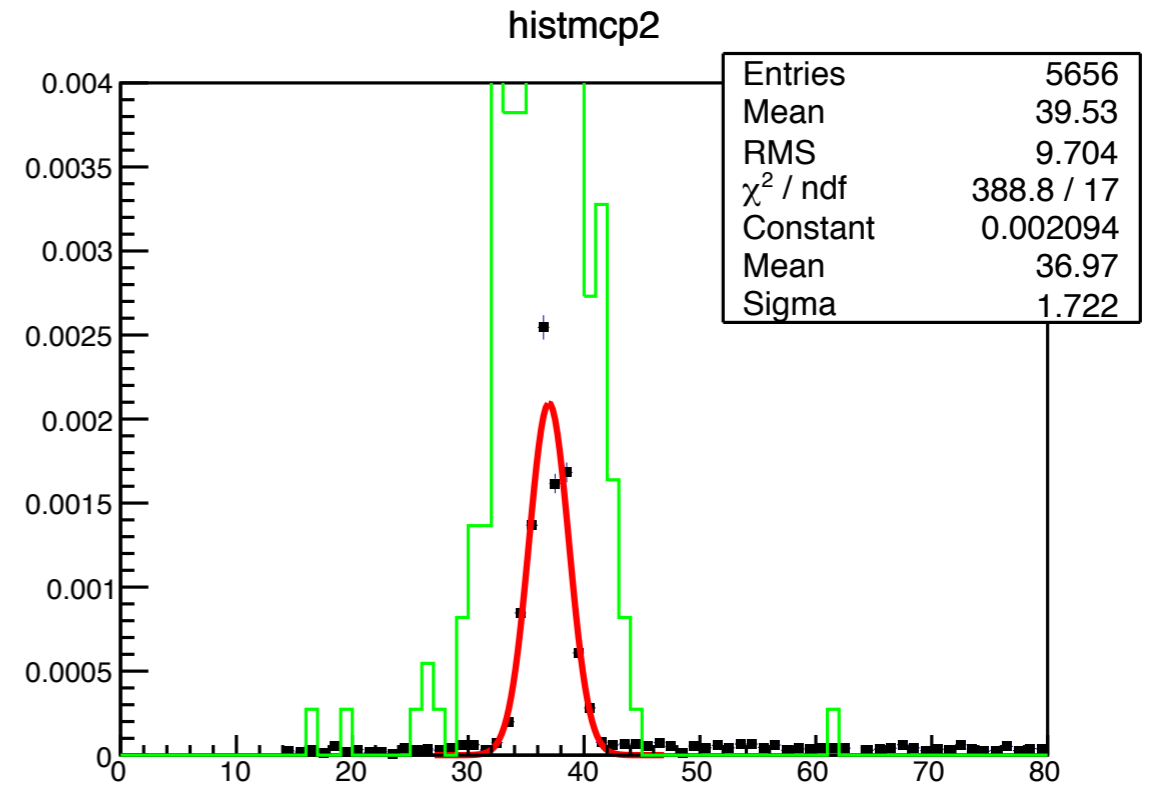
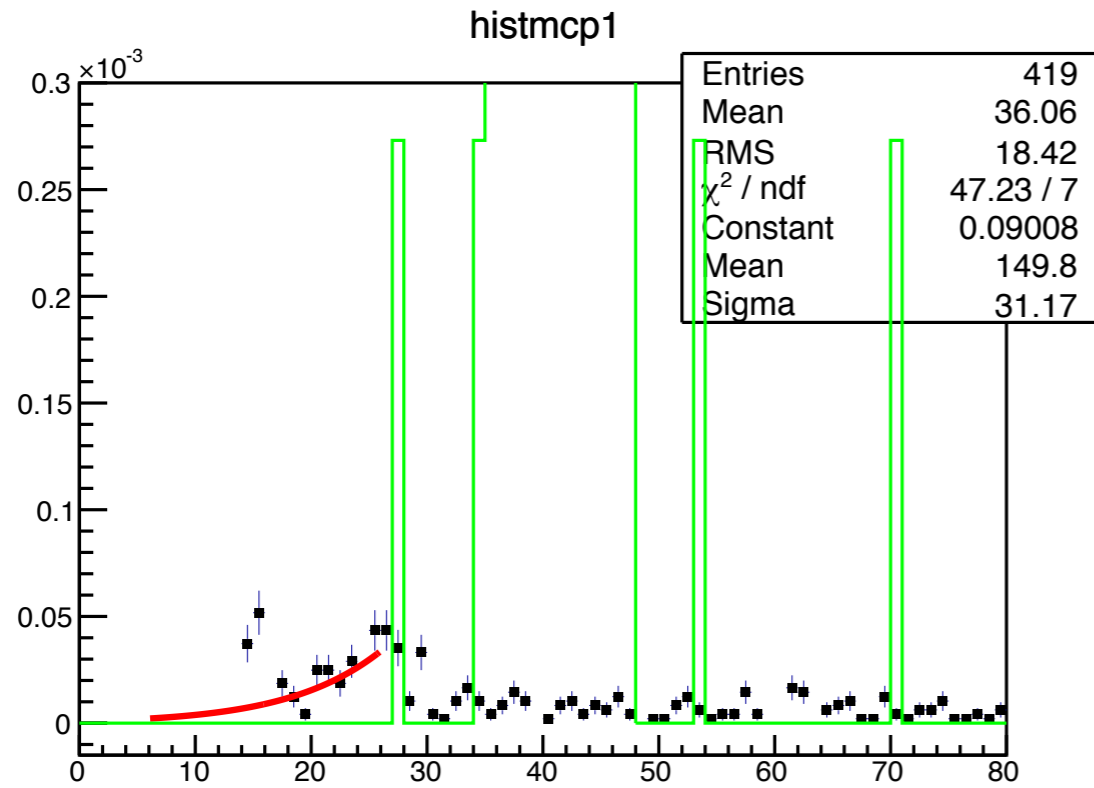


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- Photon yield is too low compared to simulation ($\sim 30\%$)
- Detection efficiency and optics have not been fully taken into account yet
- Analysis of HV-scans might lead to a better understanding
- Individual measurements have to be performed to improve understanding of optical components in the system (surface losses, coupling)