Update on Trento test beam with MSD

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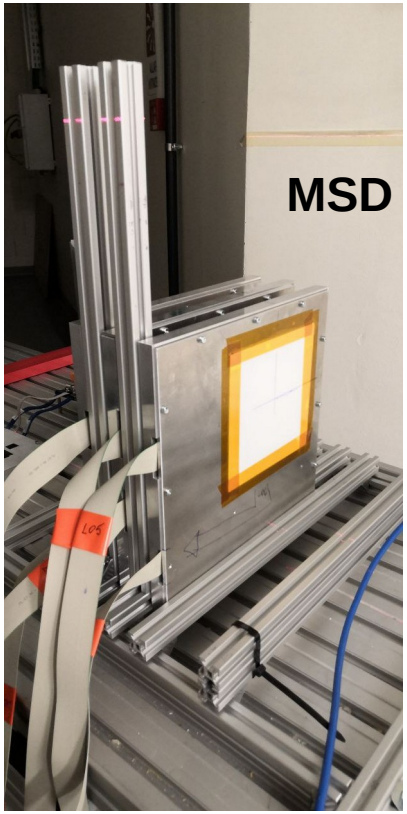
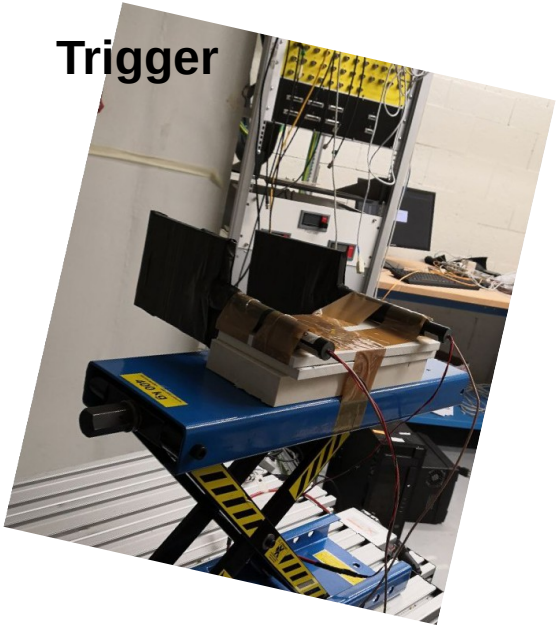
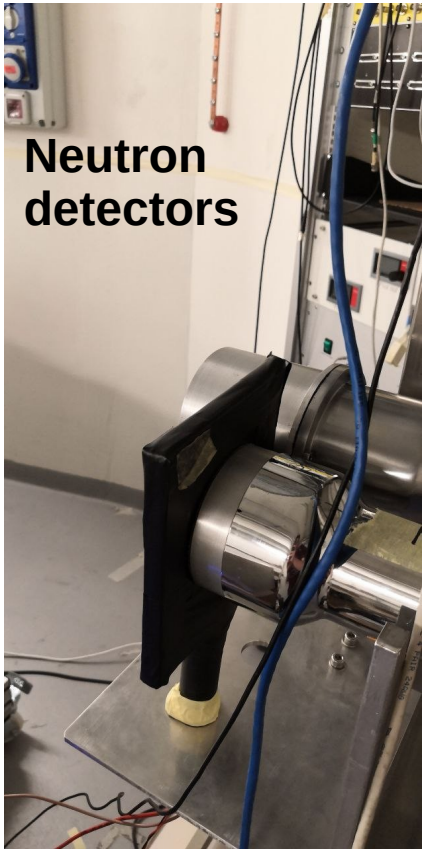
9 June 2021 – Physics Meeting

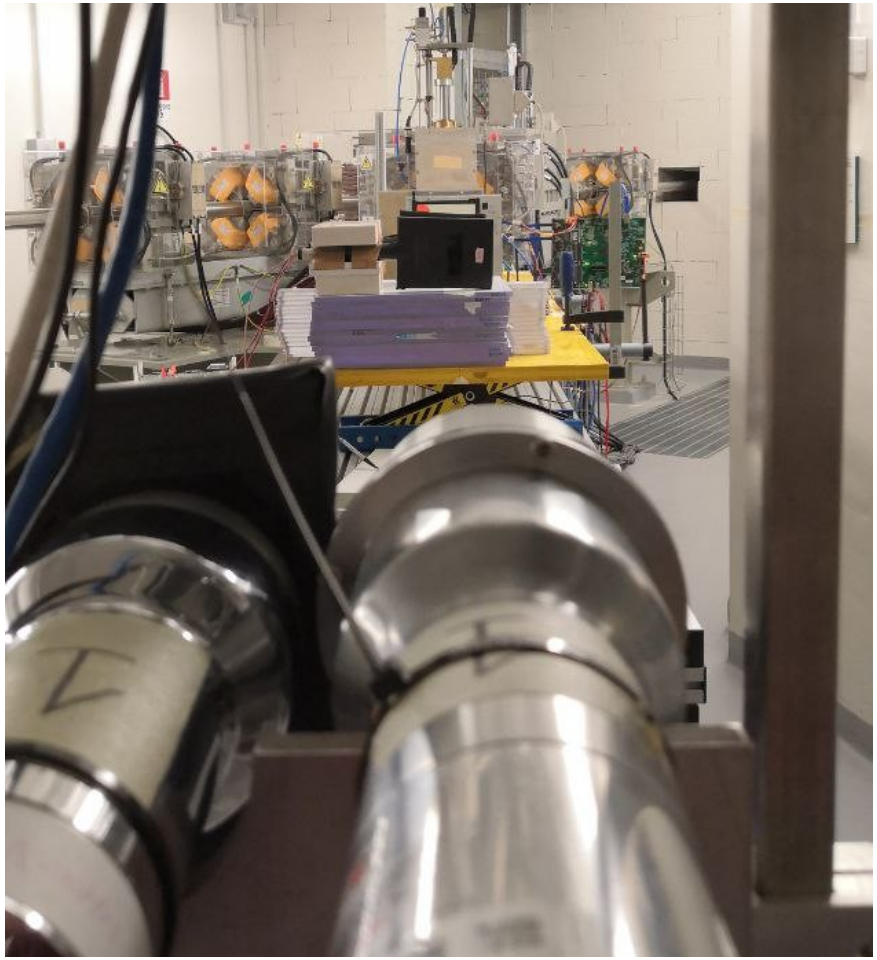
Setup

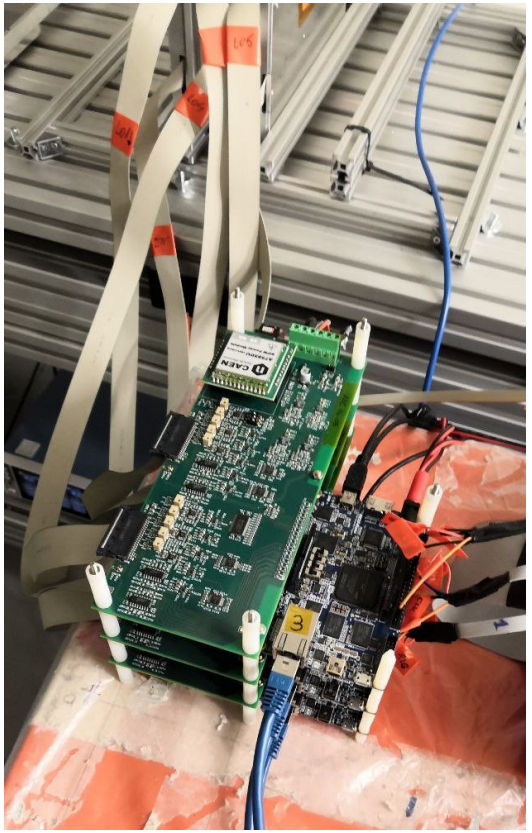






Setup





Beam schedule & DAQ numbers

Thursday 3rd June 2021: ~ 2 hours of beam, 11M events

a HW problem solved very quickly before the beam;
no other problems in two hours (only 3 runs)
mean rate 2 kHz

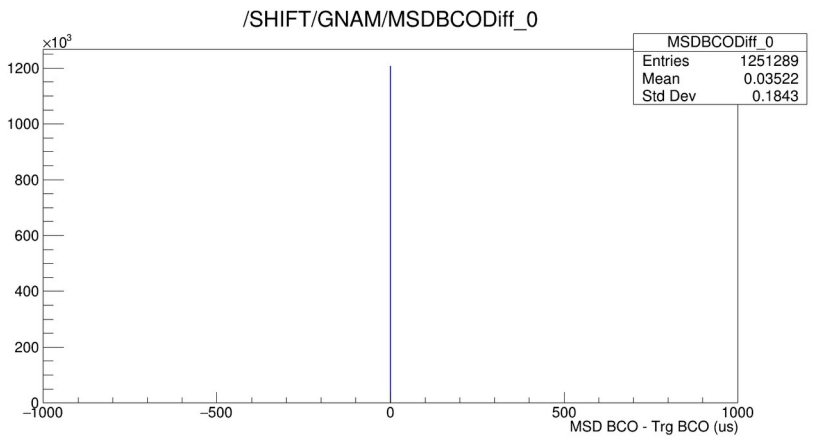
Friday 4th June 2021: ~ 3 hours of beam, 14M events

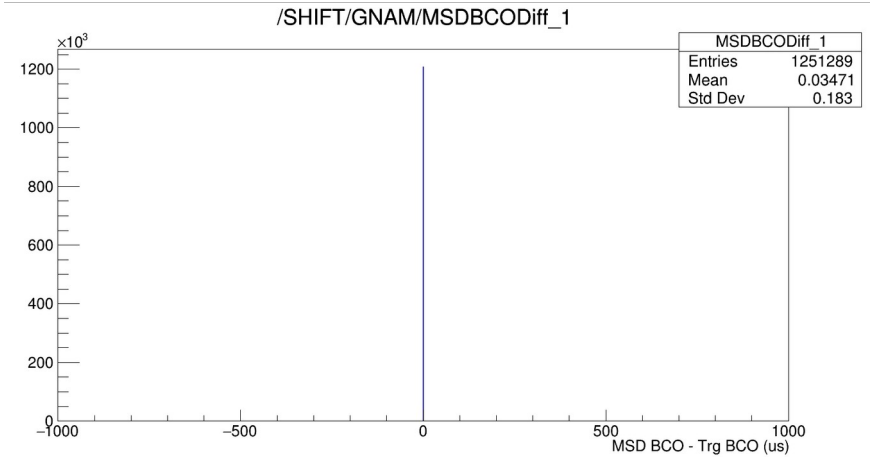
pedestals and energy scan (228, 159, 112, 70 MeV)
added online decoding and monitoring (see next slides)
mean rate > 2 kHz

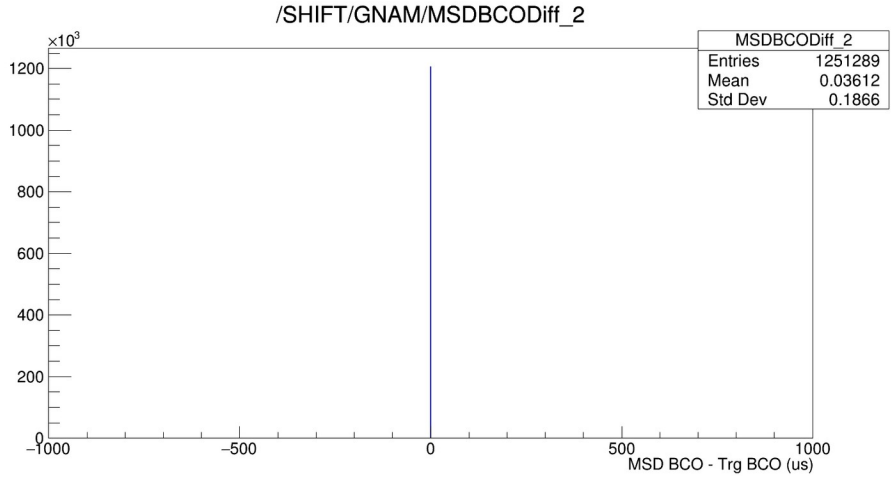
Saturday 5th June 2021: ~ 4 hours of beam, 7M events

MSD delay scan @70 MeV
added a 2.5 mm Tantalum foil to widen the beam

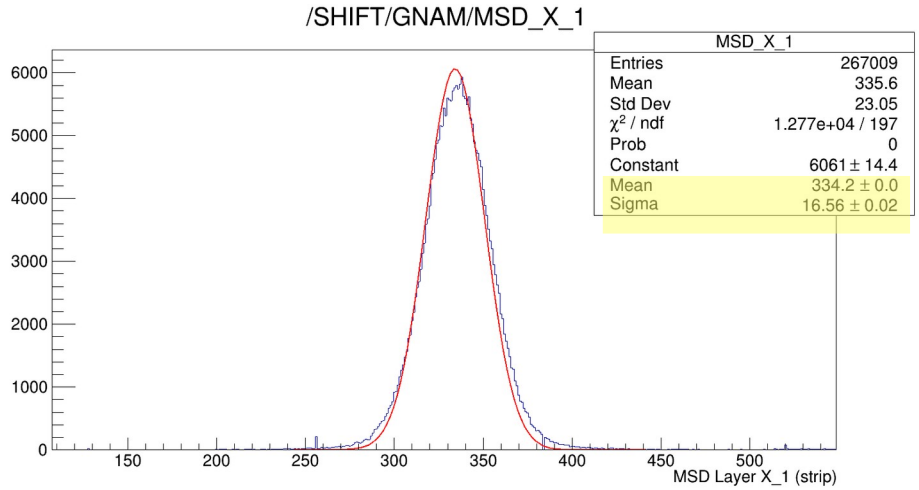
Online monitoring (timing)

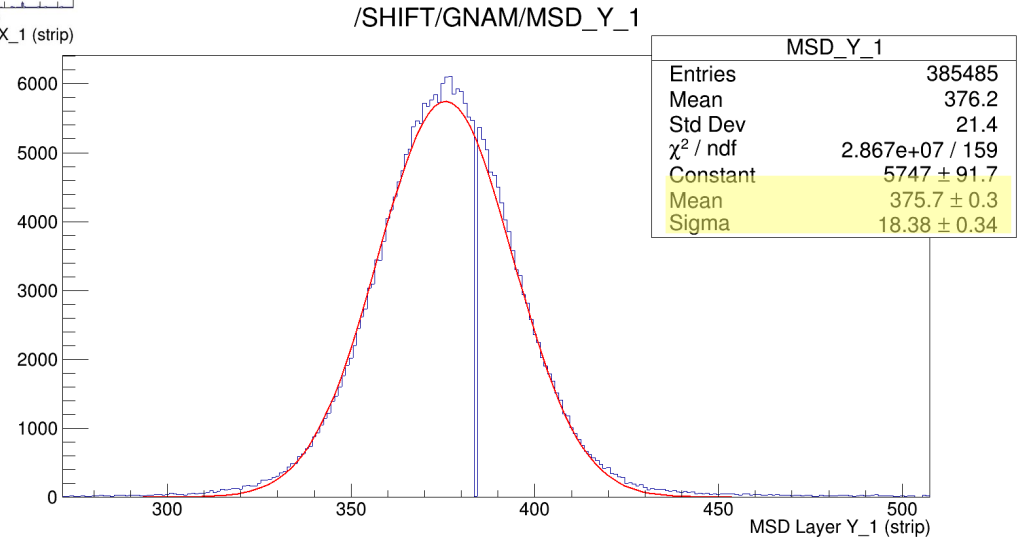




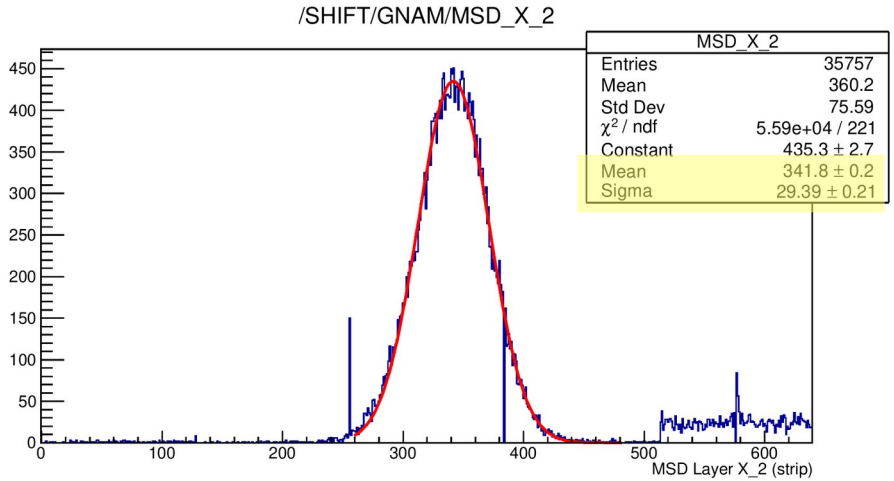


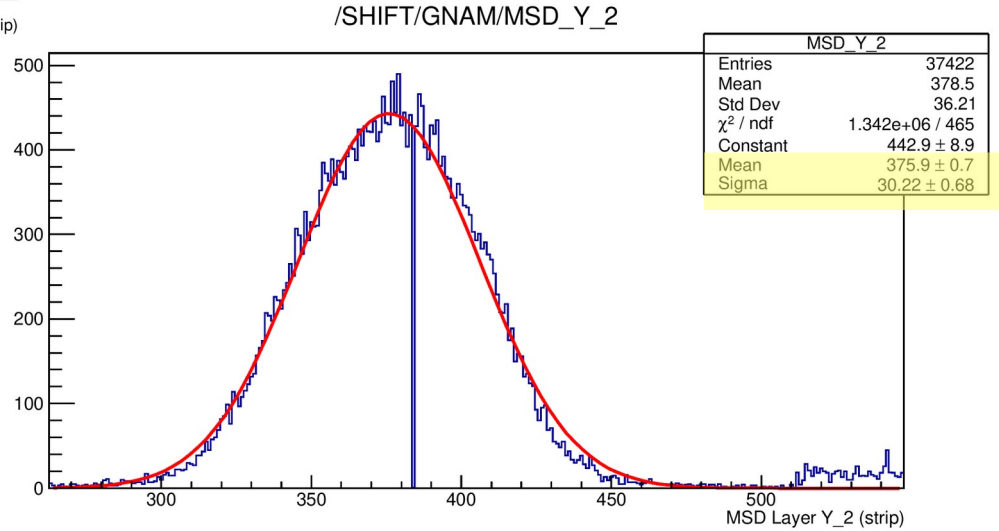
Online monitoring (beam profile 228 MeV)



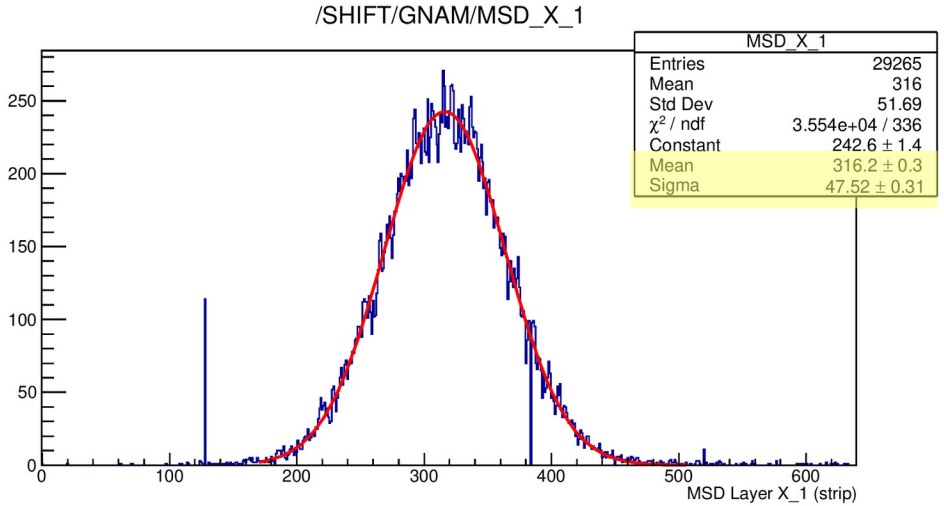


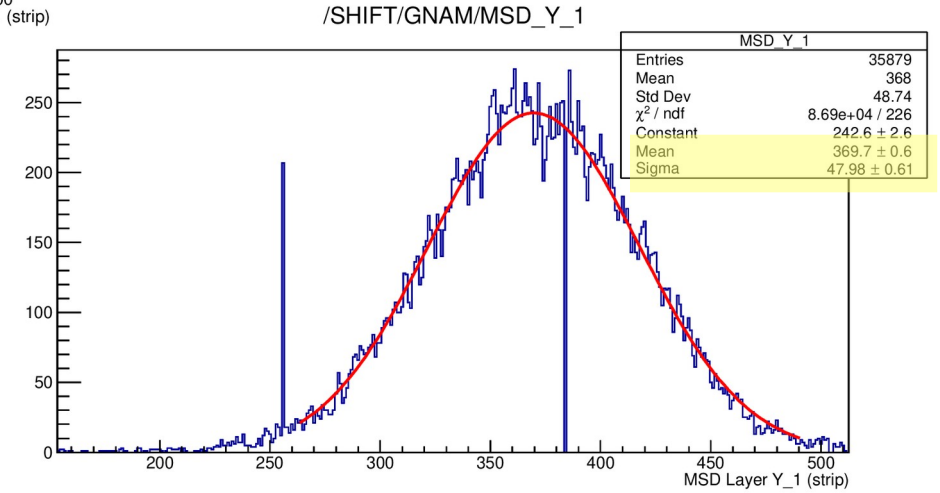
Online monitoring (beam profile 159 MeV)



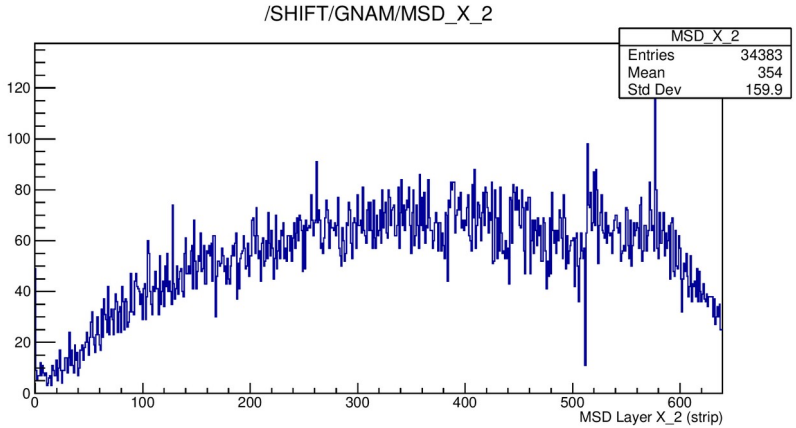


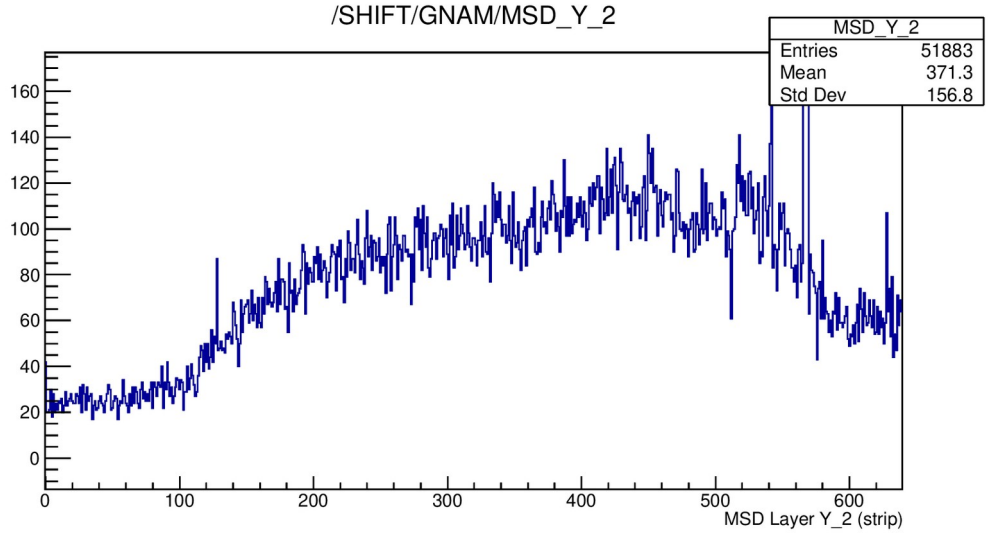
Online monitoring (beam profile 70 MeV)





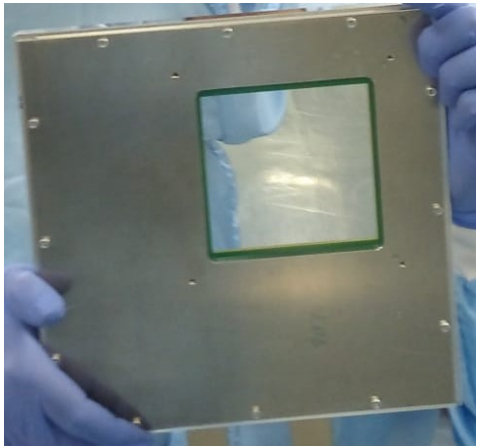
Online monitoring (228 MeV Tantalum)



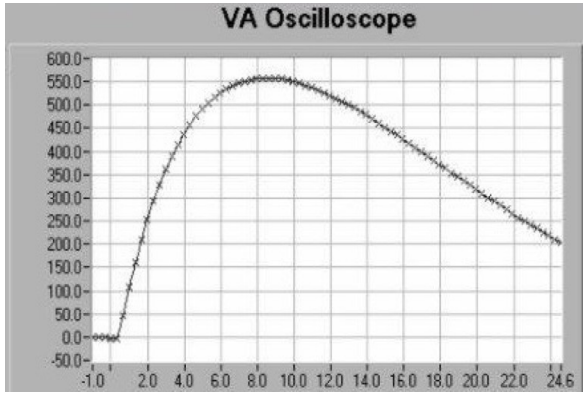


What we (hope to) learn from Trento - 1

influence of **light exposition** of metalized microstrip back on signal
effect absorbed by Common Mode fluctuation?



common mode fluctuation and noise stability during many hours of data taking



confirmation of optimal choice for **delay time**

150 um thick sensor **response** to single proton and dependence from hit finding threshold

What we (hope to) learn from Trento - 2

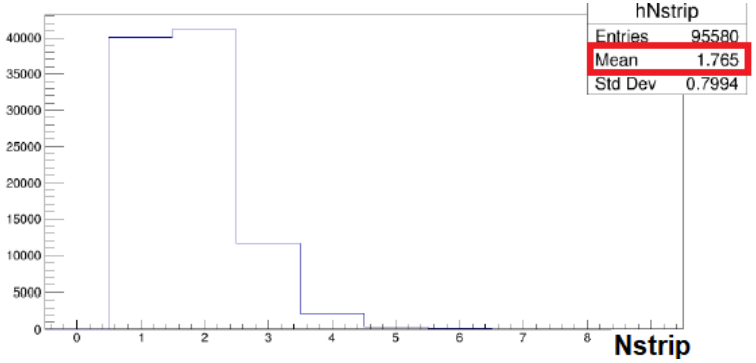
average **charge division** among adjacent strips

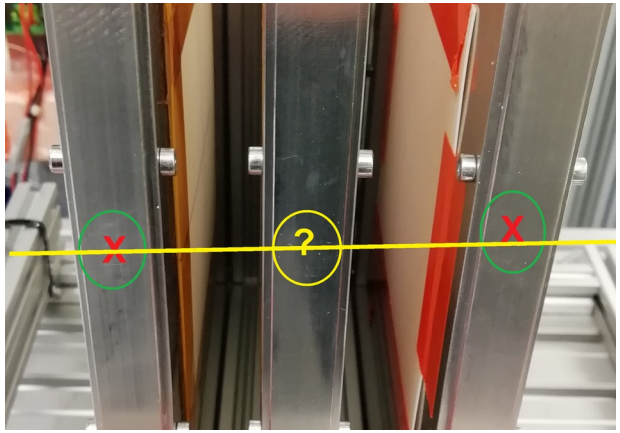
cluster width

digital spatial precision

analog spatial precision

eta-function





proton detection efficiency vs proton energy

precise tracking

influence (if any) of signal induction on y coordinate from x coordinate signal due to strips faced directly, and viceversa

Thanks for your attention!