

**MICE Collaboration**

## **Energy loss in MICE absorbers**



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# Outline



*This is a short presentation of results, I planed to do more till this CM.*

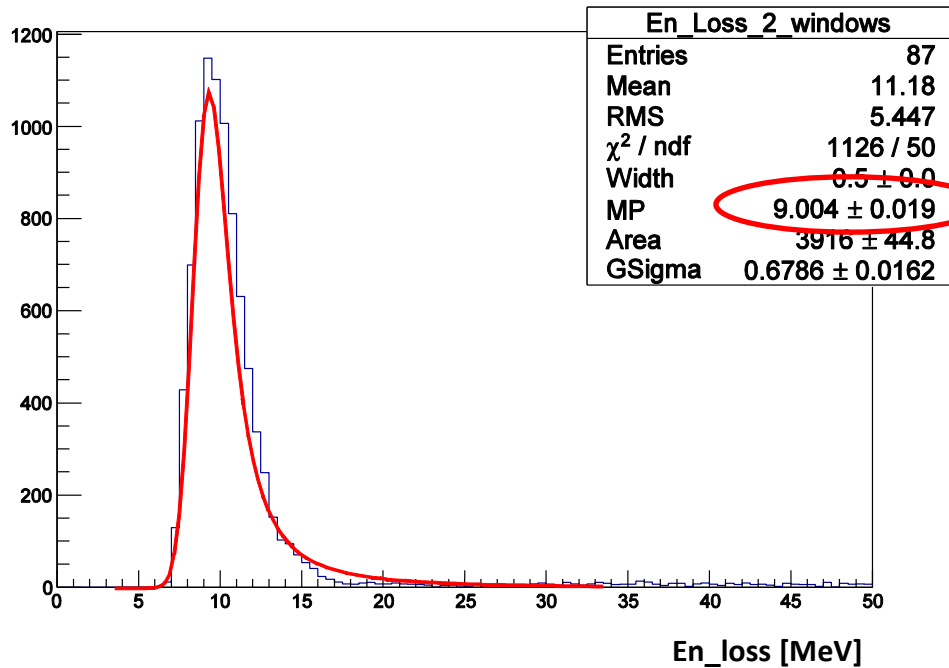
- Local MC simulation for StepIV setup, virtual detector analysis. Full and Empty LH2 and LiH absorbers.
- MC simulation for **more realistic setup** from existing grid MCproduction of run 7469, with g4bl input.
- Local MC simulation for setup of run 7469, with Full and Empty LH2 absorber.
- Status and plans

# local mc simulation StepIV setup, geometry with Full and Empty LH2 absorber



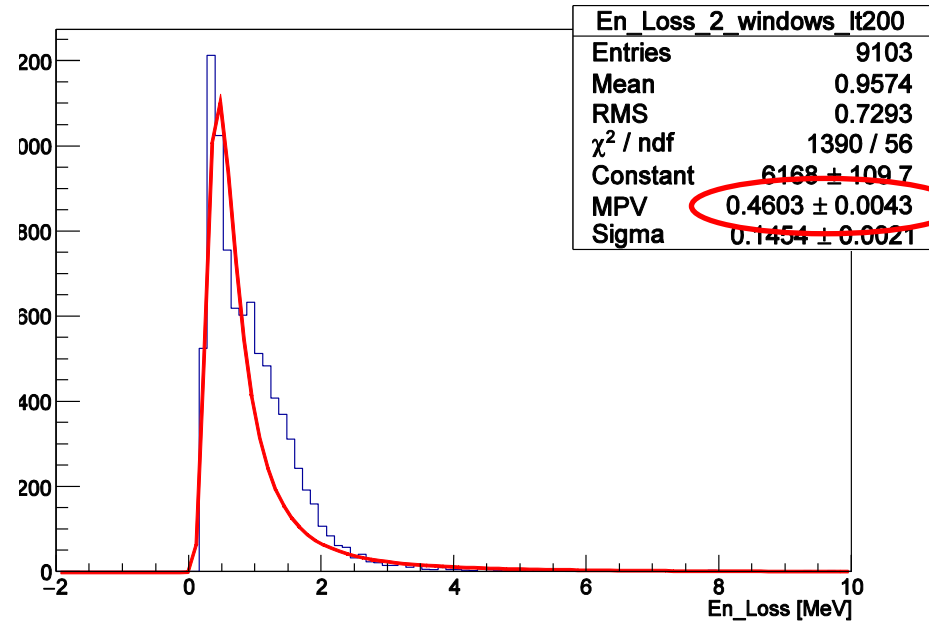
Geometry id: 120, Cooling Channel tag: StepIV-06pi200+solenoid

## Full LH2 absorber



Vitral planes analysis for  
stations positioned at 15.9m  
and 18m

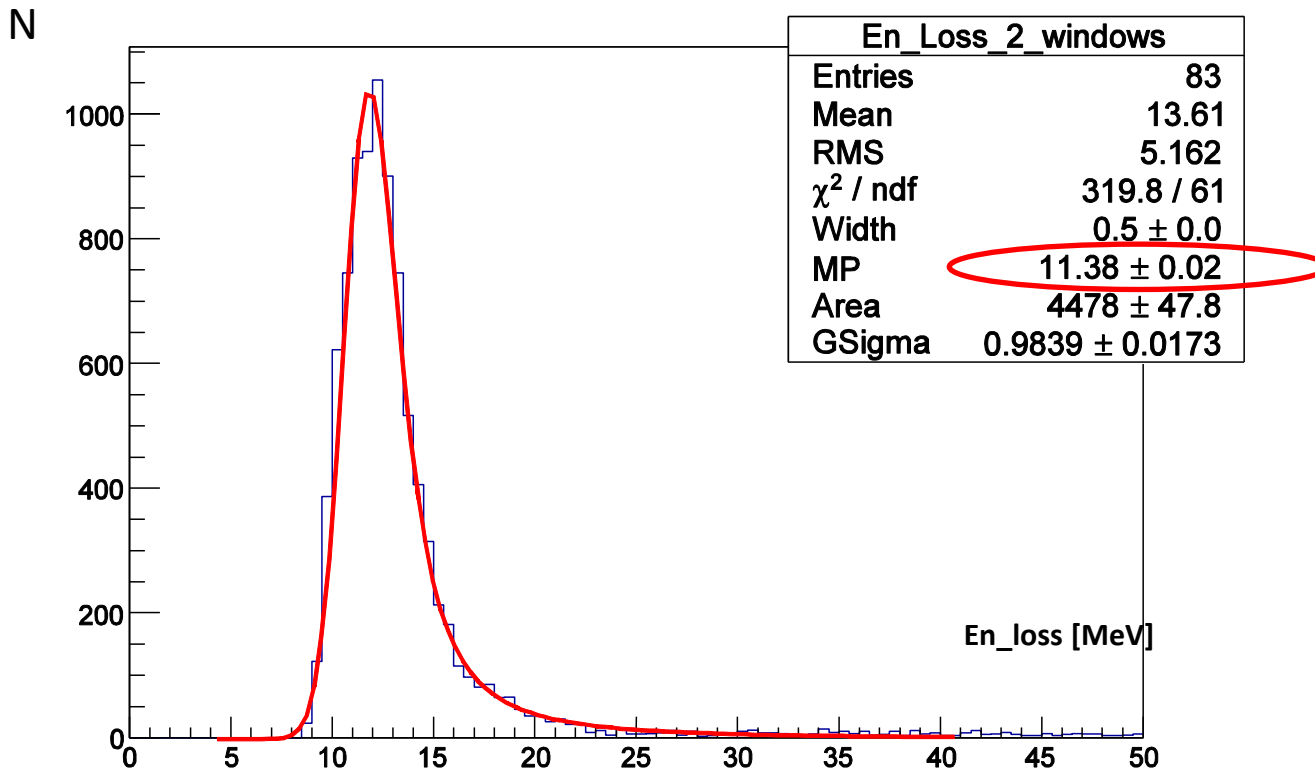
## Empty LH2 absorber



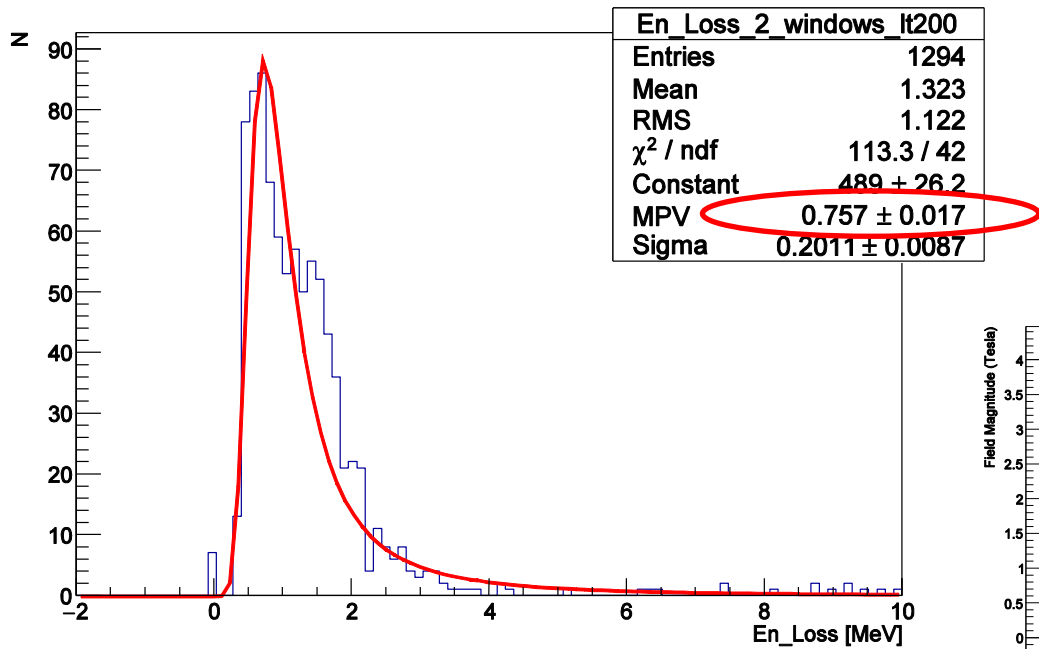
Result of smaller Energy loss than I reported earlier. This comes from the fact that virtual planes ID was not corresponding to placing of the virtual planes, but ID goes to special virtual planes also. I avoided using of strict placing position for virtual planes gives because I get poorer statistics,

Geometry id: 120, Cooling Channel tag: StepIV-06pi200+solenoid

Virtual detector analysis for stations positioned at 15.9m and 18m

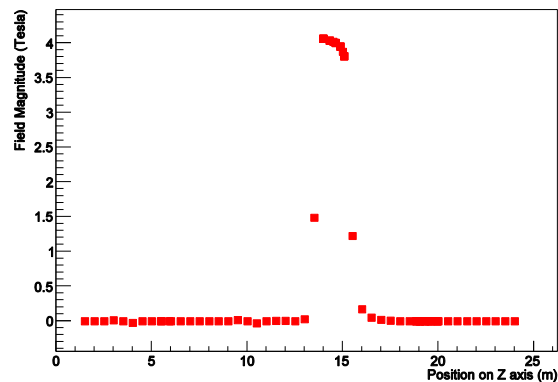
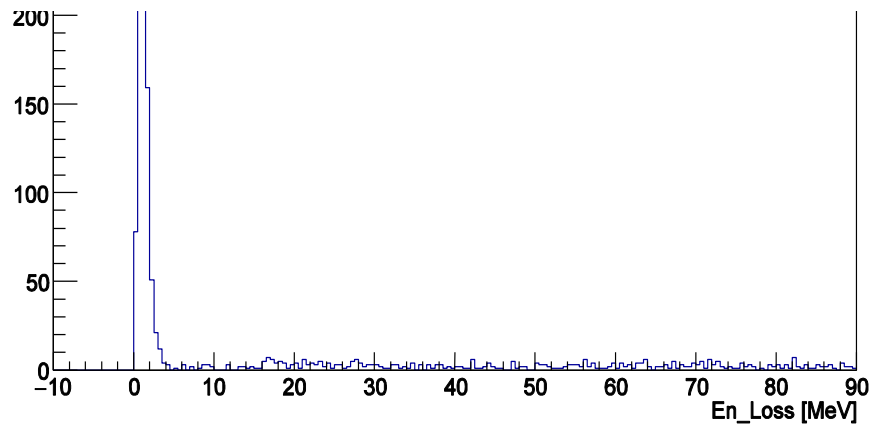


# MCproduction on the grid. run7469. All particles as primaries.



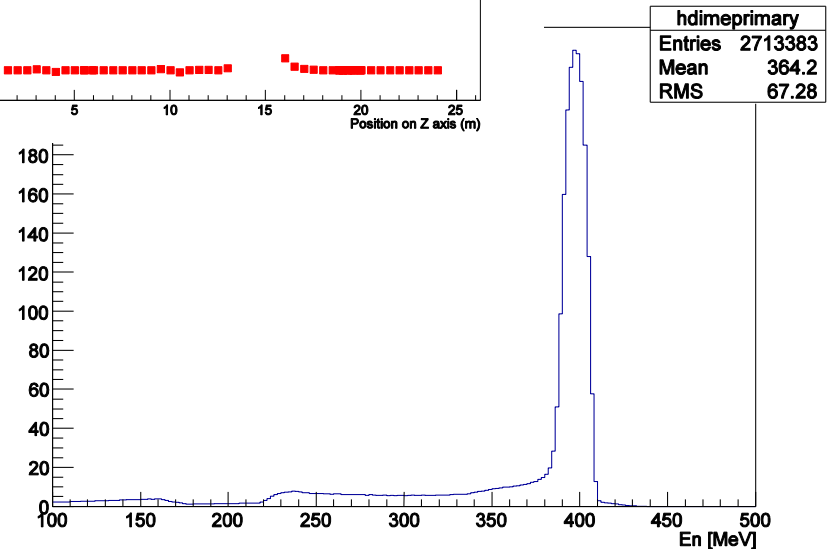
Run 7469, Xe in LH2 absorber.

Virtual planes analysis for stations positioned at 16m (station id 50) and 18m (station id 54)

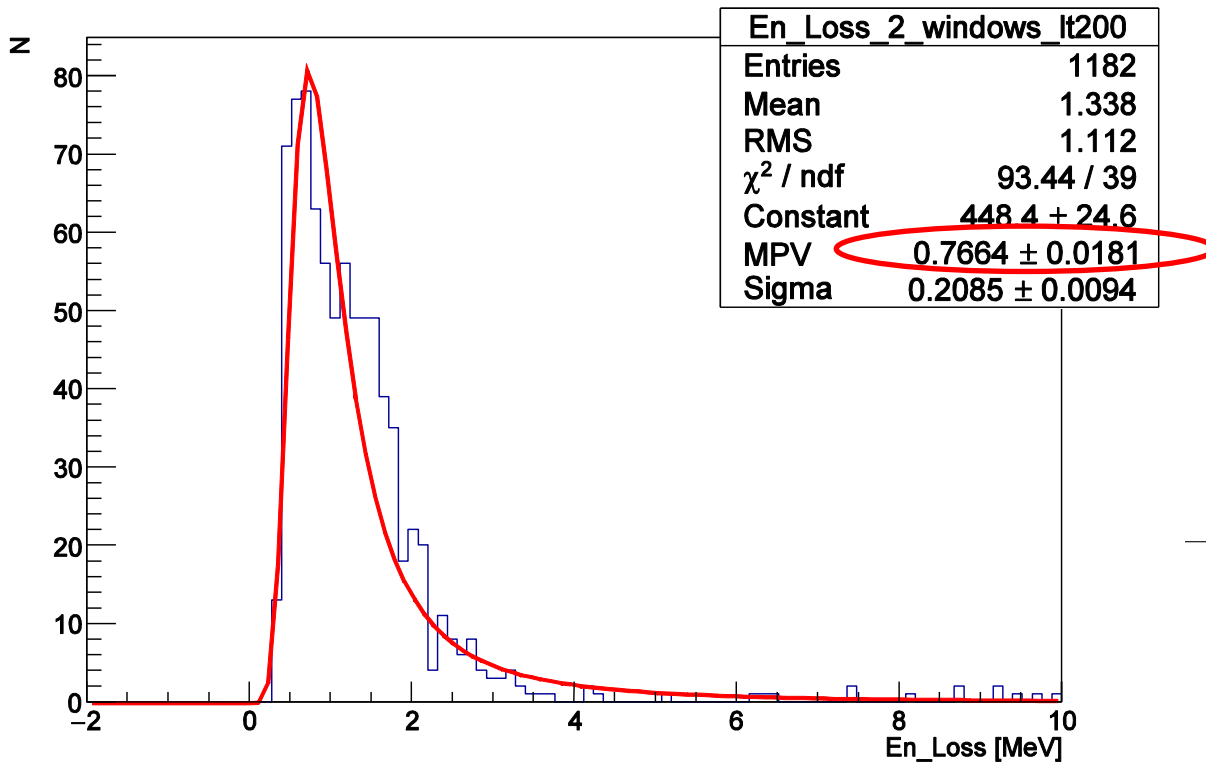


Magnetic field

Energy of primaries

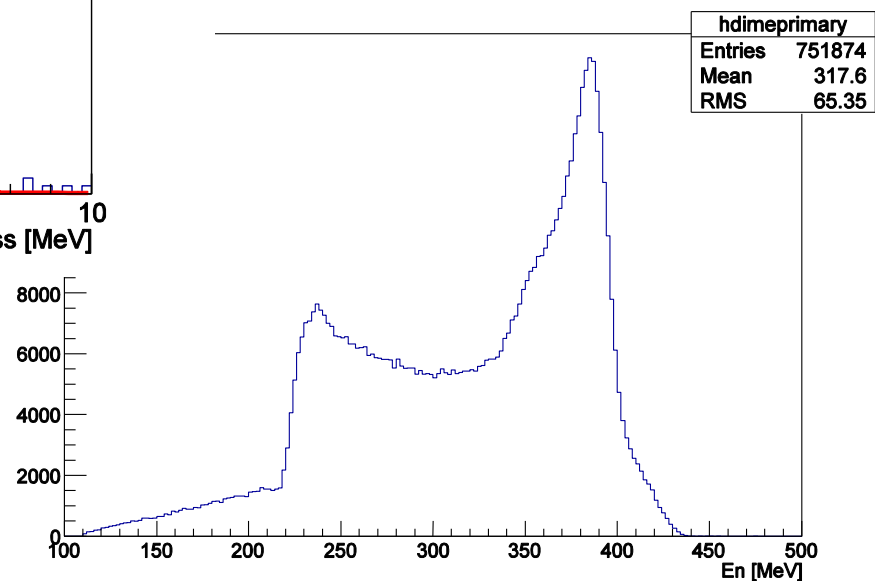


# MCproduction on the grid. run7469. Selected Muons as primaries.

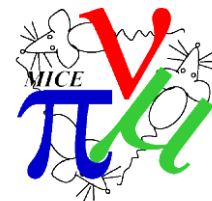


Run 7469, Xe in LH2 absorber.

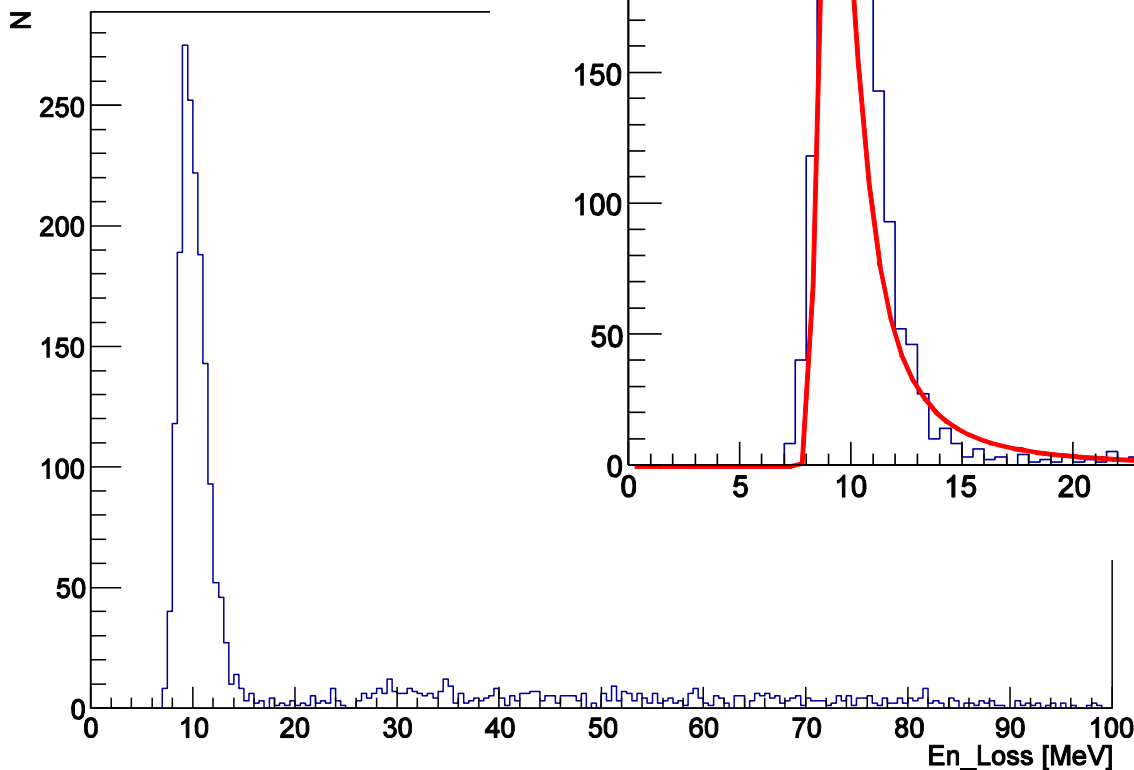
Energy of the  
Primaries.  
Selected muons



# local mc simulation of 7469, with full LH2 absorber



Same setup as for run 7469, but with full LH2 absorber

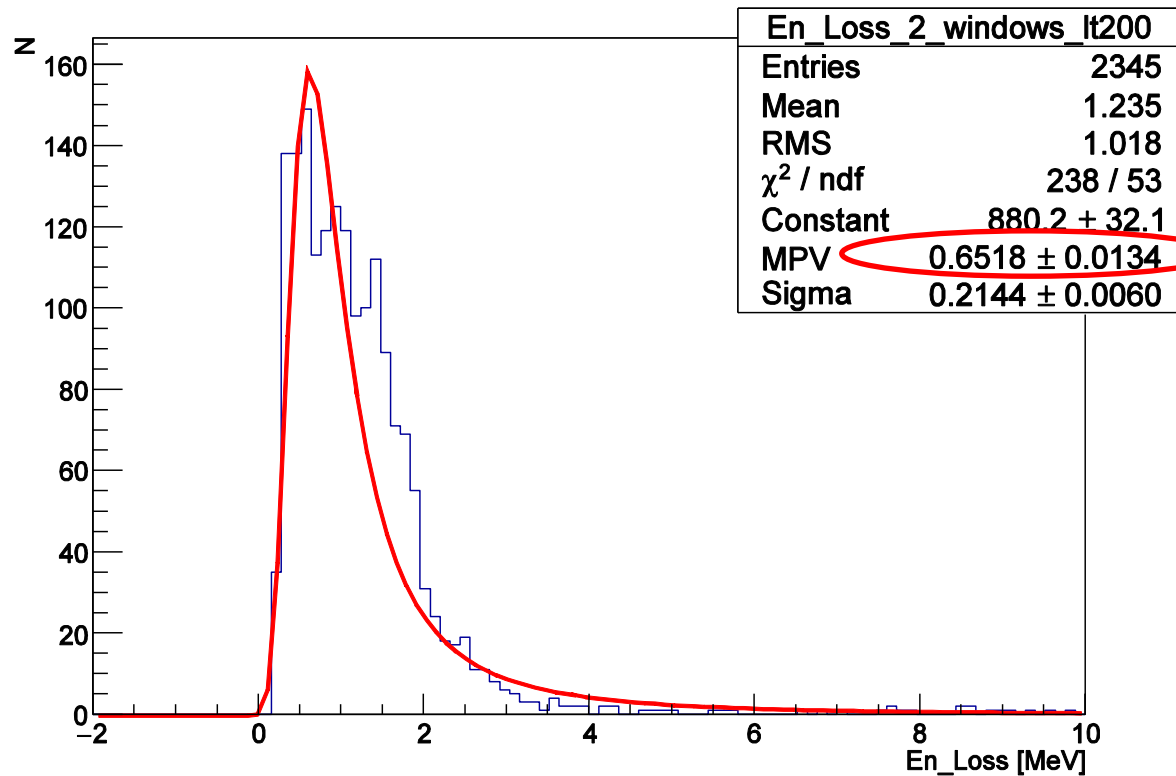
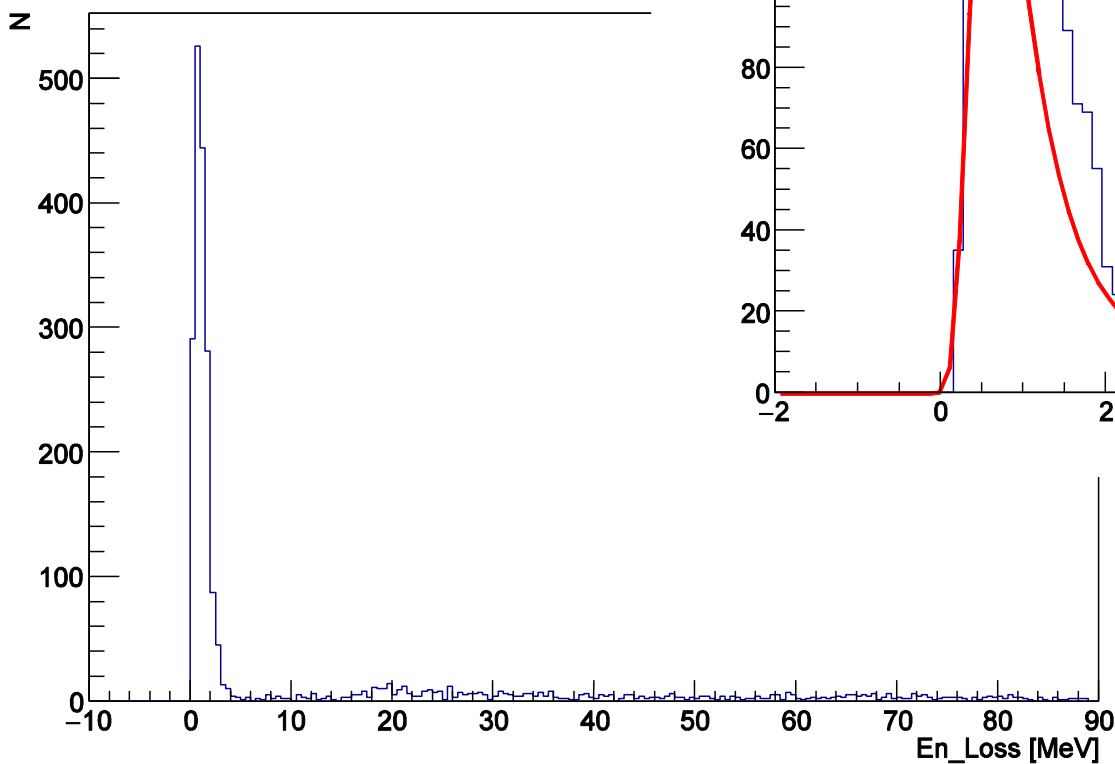


En_Loss_2_windows_lt200	
Entries	2279
Mean	13.64
RMS	9.137
$\chi^2 / \text{ndf}$	514.8 / 78
Constant	$1555 \pm 58.8$
MPV	$9.212 \pm 0.037$
Sigma	$0.4814 \pm 0.0134$

# local mc simulation of 7469, with Empty LH2 absorber



Same setup as for run 7469,  
but with Empty (galactic) LH2  
absorber





- I showed only MC virtual planes analysis
- I planned and failed to produce meaningful analysis using reconstructed tracks in time for the CM, for both simulated and measurements data.
  - I had a problem with MAUS installations, and my plans has to be postponed. Also, unlike with earlier MAUS versions, I was unable to do simulation and reconstruction in one go, and this created a additional small, but unexpected delay.
- At this point, I can only point out that I'd like to continue to work on the Energy loss analysis.