No success in improving the muon simulation





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- Reconstruction of intercalibration runs for data
- before after Number of Entries/Number of Hits 10⁻² 10⁻⁴ Number of Entries/Number of Hits -010-3 -010-2 10⁻² ⊧ Data Data MC MC 10⁻³¹ E E 10-6 8 10 Hit Energy in MIP 10 8 0 2 2 6 6 Hit Energy in MIP
- Using only HG data





- Reconstruction of intercalibration runs for data
- of Events after before Number of Events 0.2 0.1 0.1 0.1 Data Data MC MC Entries/Number 0.1 nHitsHisto Data nHitsHisto_MC nHitsHisto Data nHitsHisto MC Entries 8991368 Entries 5983209 5864464 Entries Entries 5983209 Mean 38.04 Mean 40.35 38.4 Mean 40.4 Mean Std Dev 4.625 9.833 Std Dev Std Dev 9.28 Std Dev 4.926 of Number .05 20 40 60 80 100 30 40 50 60 70 80 90 10 20 Number of Hits Number of Hits
- Using only HG data



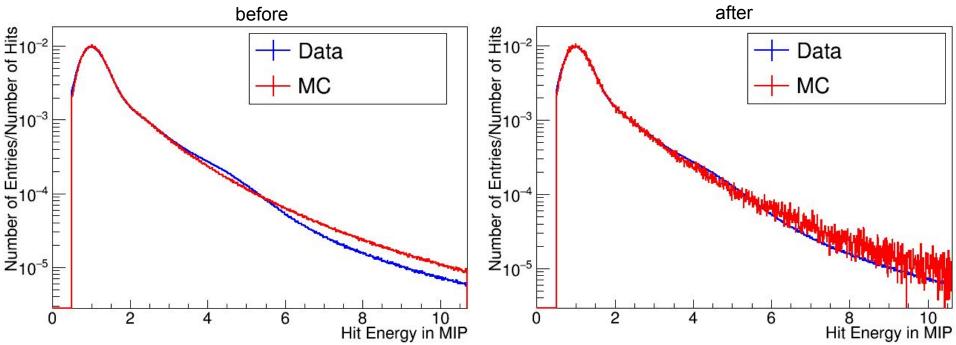


- Reconstruction of intercalibration runs for data
- after before 1.5∟ 1.5 Number of Hits/Number of Events Number of Hits/Number of Events Data Data 1.4 1.4 MC MC 1.3 1.3 .2 1.2 **1.1**⊢ 0.9 0.9 0.8 0.8 0.7 0.7 0.6[±] 0.6 30 35 Layer Number 5 35 n 15 20 25 30 5 10 10 15 20 25 30 Layer Number
- Using only HG data





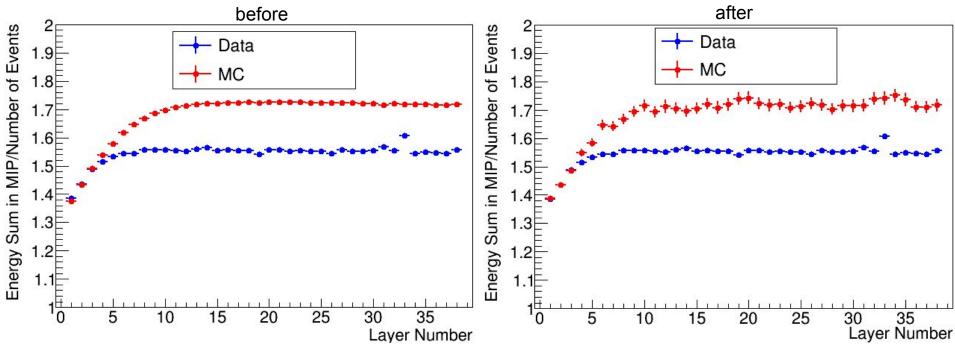
- Changing of the minimum kinetic energy for cut-off in the simulation
 - Both in scintillator material and in the steel







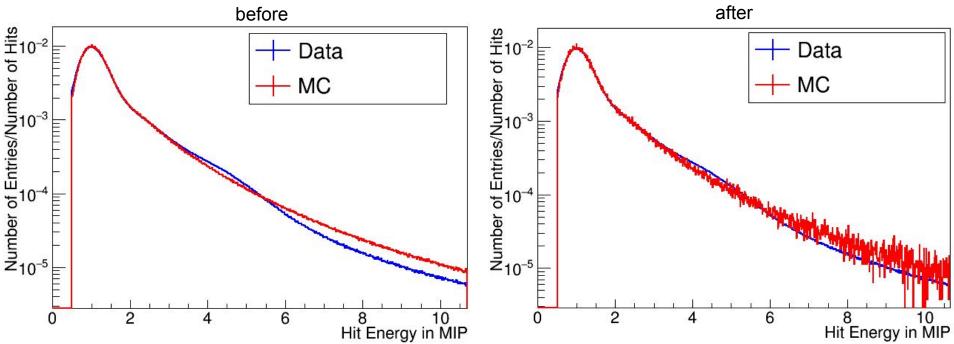
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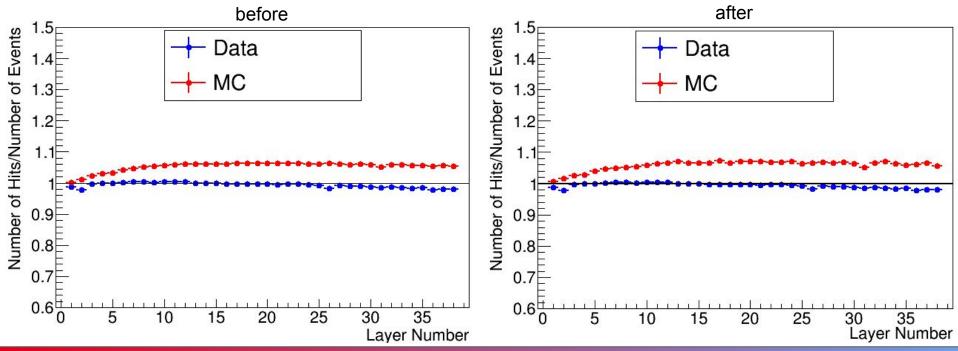
- Using different physics lists
 - Also QGSP_BERT_HP_EMY for optimized treatment of em processes







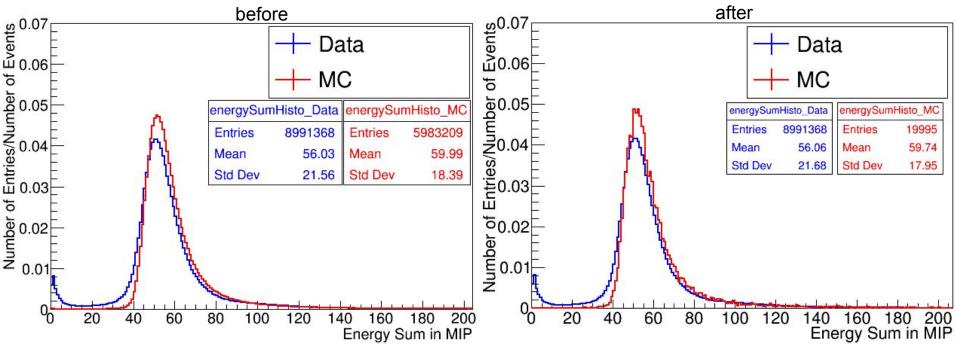
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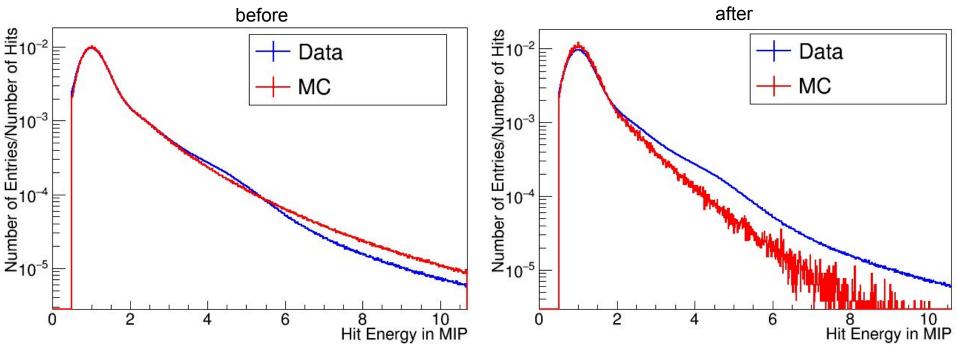
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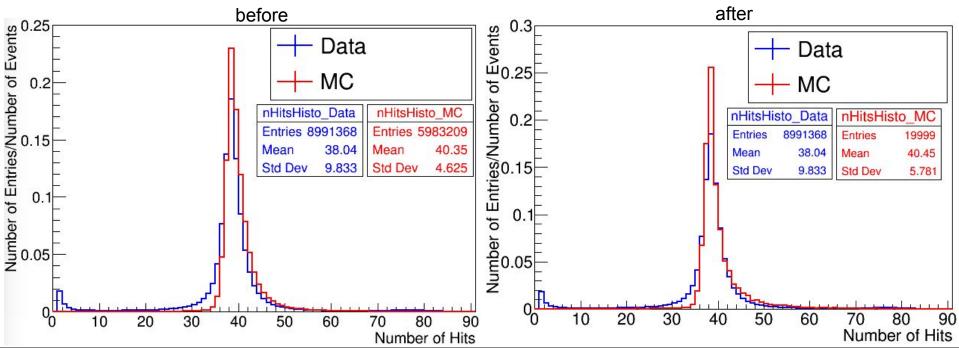
- Changing the material in the simulation
 - Air instead of steel for the 38 layers







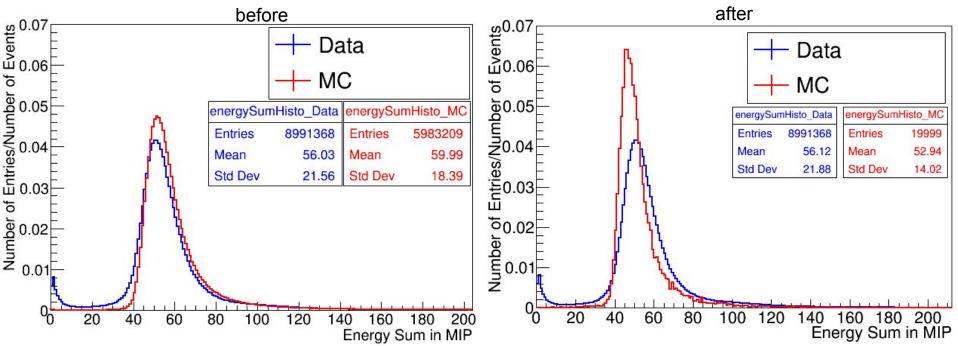
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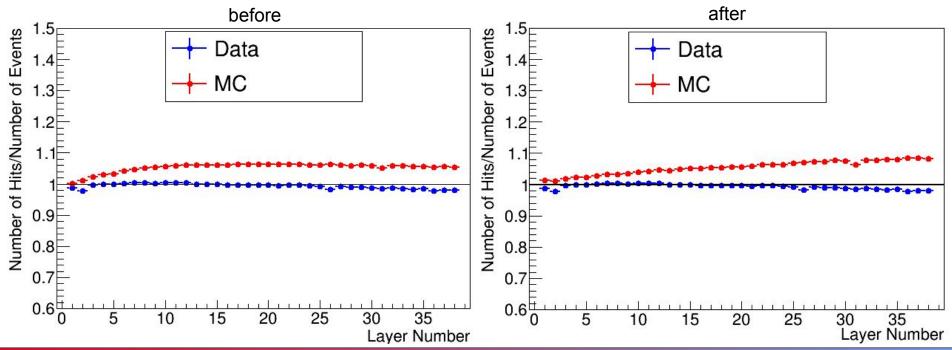
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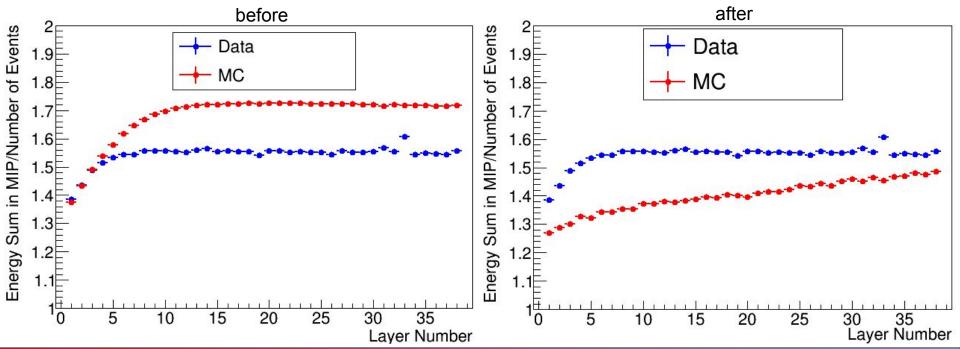
- Changing the material in the simulation
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- Changing the material in the simulation
 - Air instead of steel for the 38 layers









- Learned to reconstruct intercalibration runs
- Learned several new features one can change in the simulation
 - Minimum energy for cut-off
 - Starting distance of beam from front of detector
 - Different physics lists (QGSP_BERT_HP_EMY for optimized low em treatment)
 - Exchanging materials
 - Material composition (to be continued)







- Learned to reconstruct intercalibration runs
- Learned several new features one can change in the simulation
- No success in improving the muon simulation
- But some new interesting features

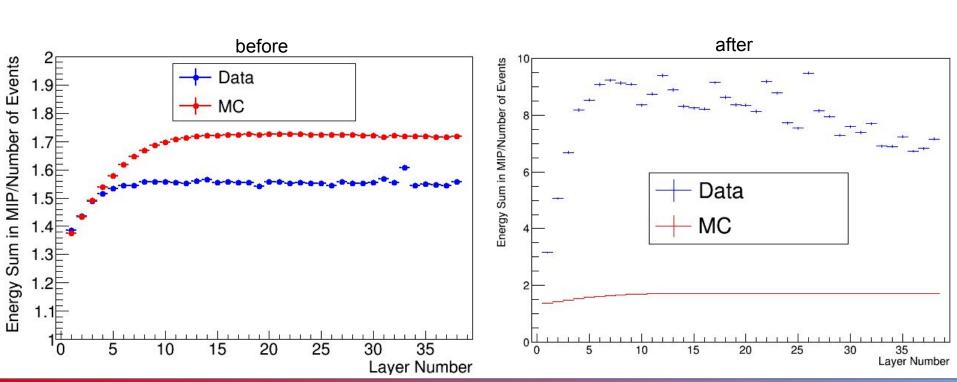
Backup





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