Comparison of ν_μ-Ar multiplicity distributions observed by MicroBooNE to GENIE model predictions

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μBooNE

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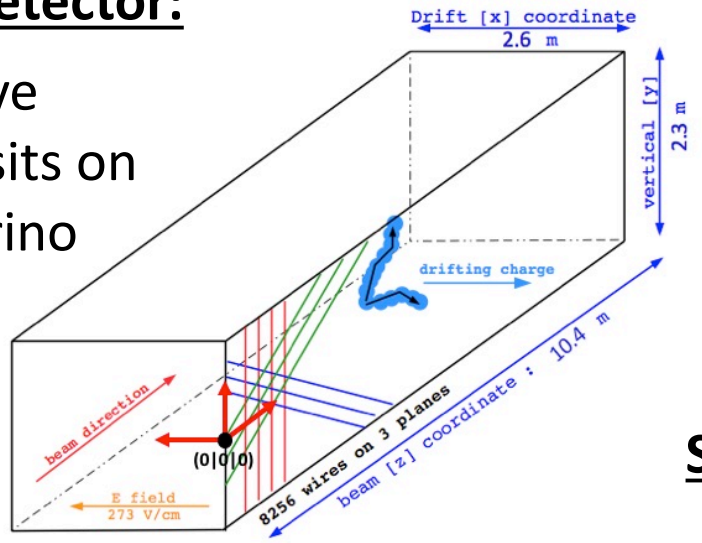
MicroBooNE detector:

85-tonne active mass LArTPC sits on Booster Neutrino Beamline at Fermilab



Motivations:

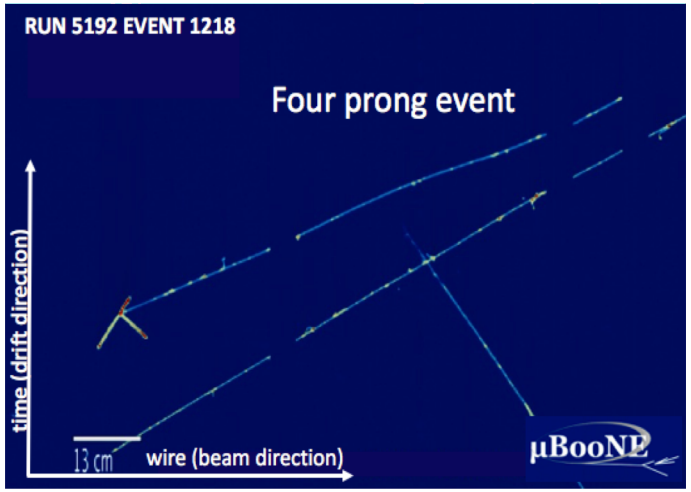
1- First measurement of charged particle multiplicity in CC interactions in Ar

2- Directly observable quantity

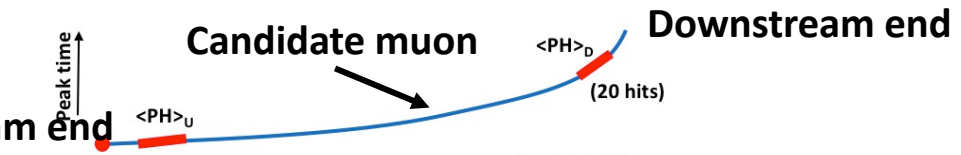
3- Provides stringent test for neutrino event generators

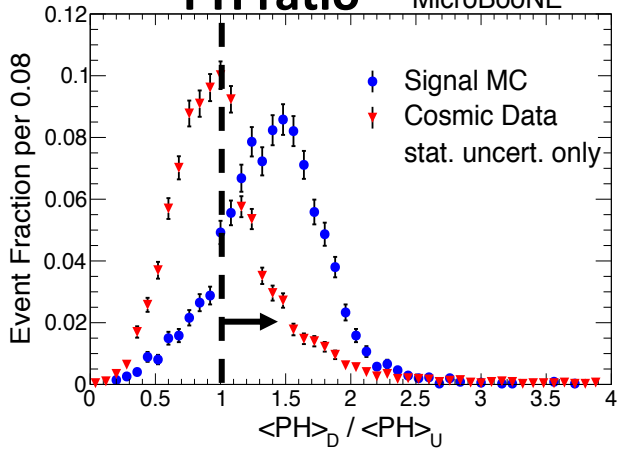
4- Excellent cosmic ray background rejection

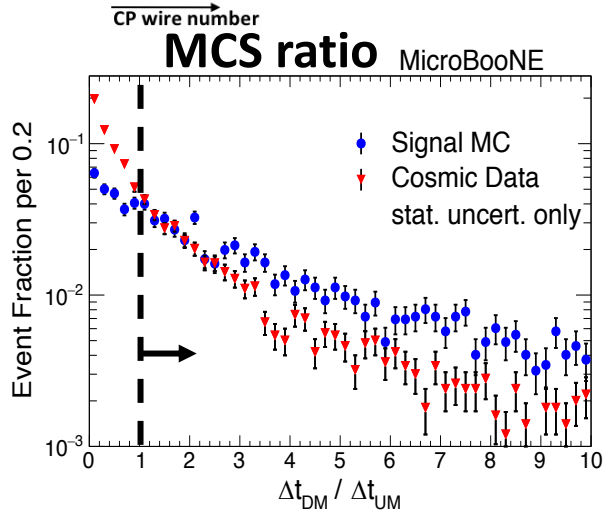
MicroBooNE 4-prong event display:



Signal extraction:







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GENIE expectations

Results

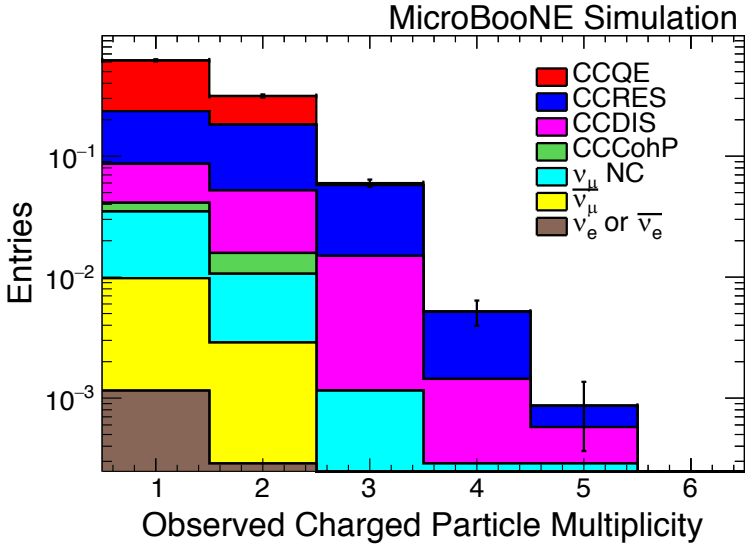
Charged particle multiplicity

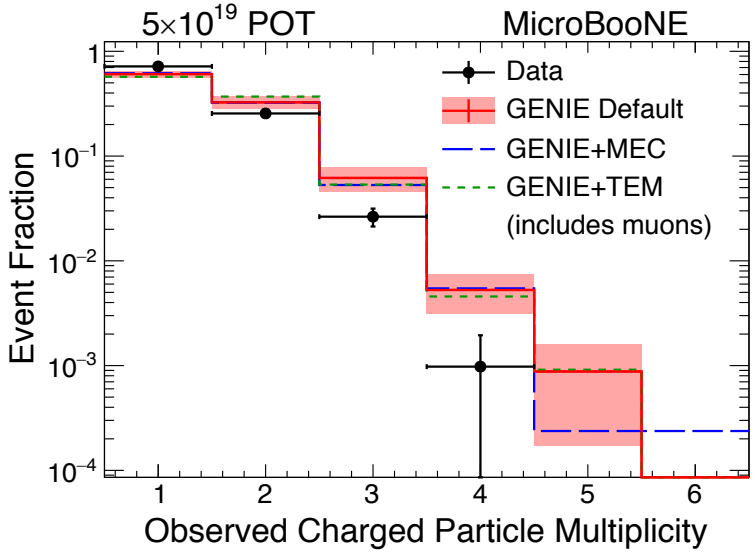
Conclusions:

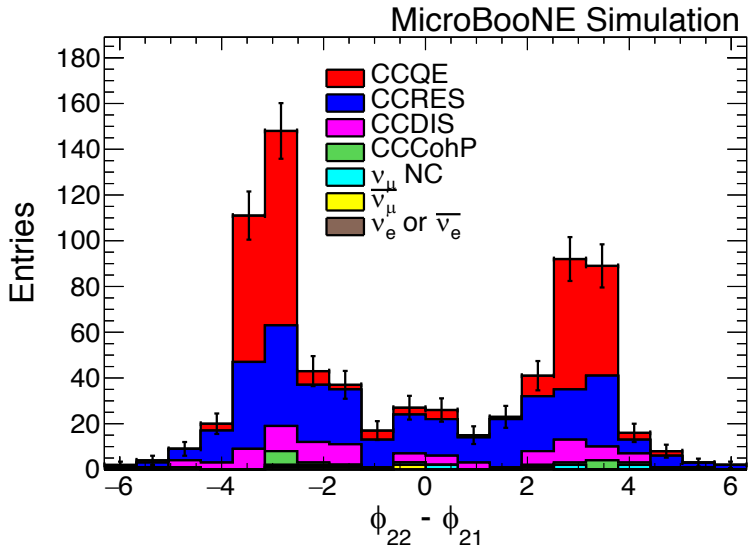
1- All three GENIE models agree well with the data

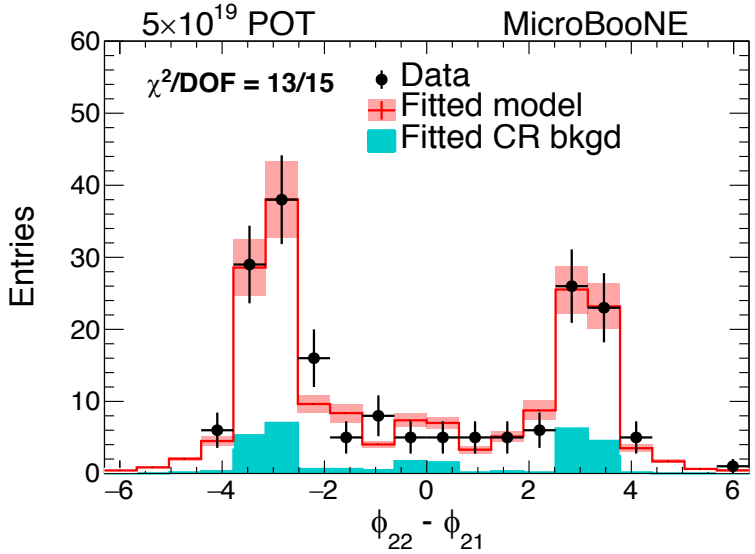
2- Slight discrepancy between data and models in higher multiplicity bins

Multiplicity 2: Φ_2-Φ_1









μBooNE

arXiv:1805.06887 [hep-ex], Phys. Rev. D (submitted)