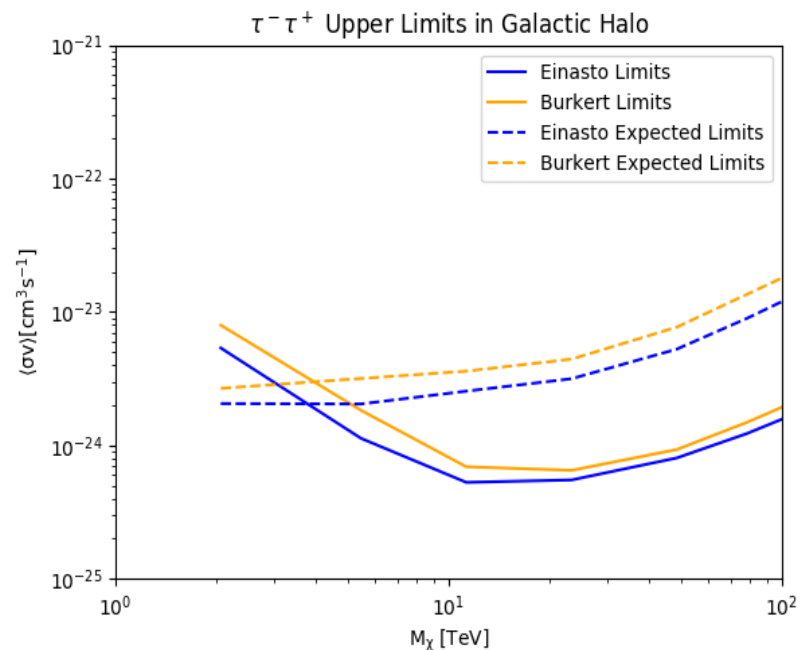
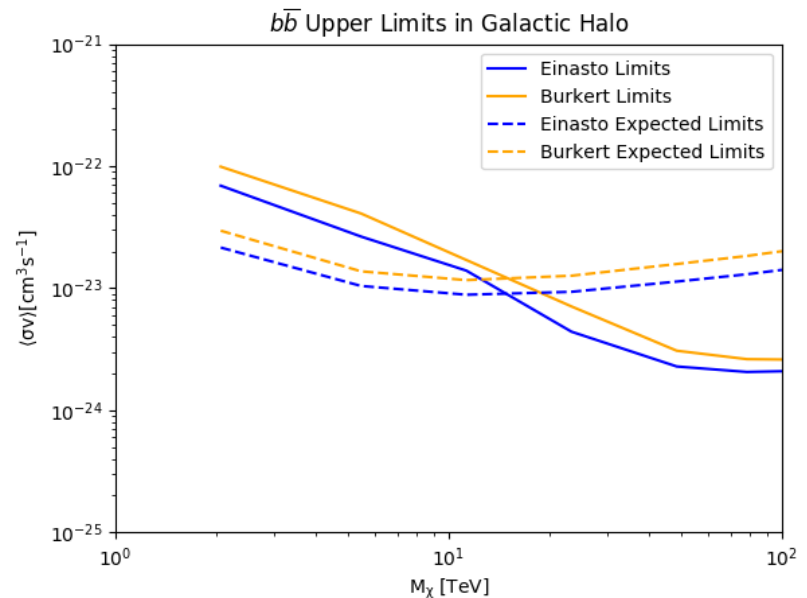


Dark Matter and the Neural Net (Episode III: Revenge of the Bugs)

Joe Lundeen
11/14/2019

Expected Limits

- Found bug in pseudo-expected limit code
 - Was not actually setting $\text{signal}=\text{background}$
 - Now that it's fixed, can compute actual pseudo-expected limits
- As expected, the limits are worse than expected at low masses, and better than expected at high masses
- Still unsure of cause of negative excess, but at least one bug is fixed



Neural-Net Retraining

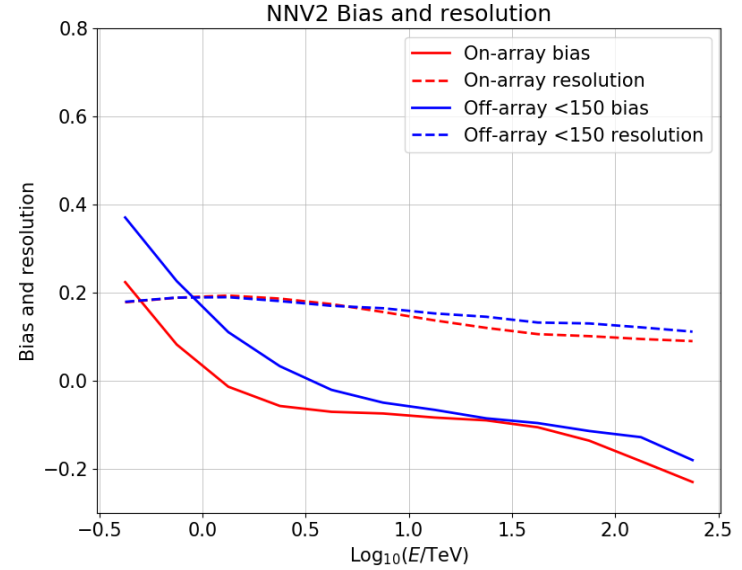
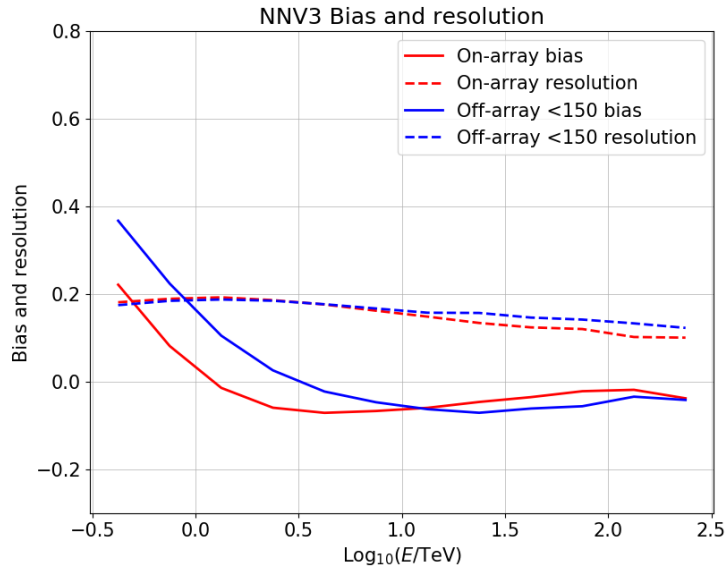
- Performance with LDF Amp is better with new pass 5 MC
- Still only using quality cuts to select training events: no G/H cuts available yet
- Training on ~20000 events with new LDF fit and likelihood core fitter
- Still not getting optimal performance
- Training with LDF Amp is better than training with no amplitude measure
- Interesting effect:
 - Training on nHit/nChTot gives better performance than nHit/nChAvail

Performance Comparisons

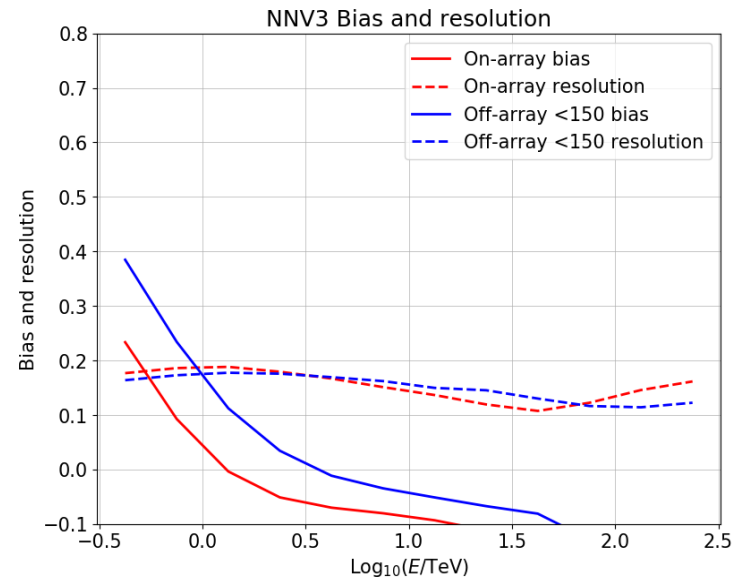
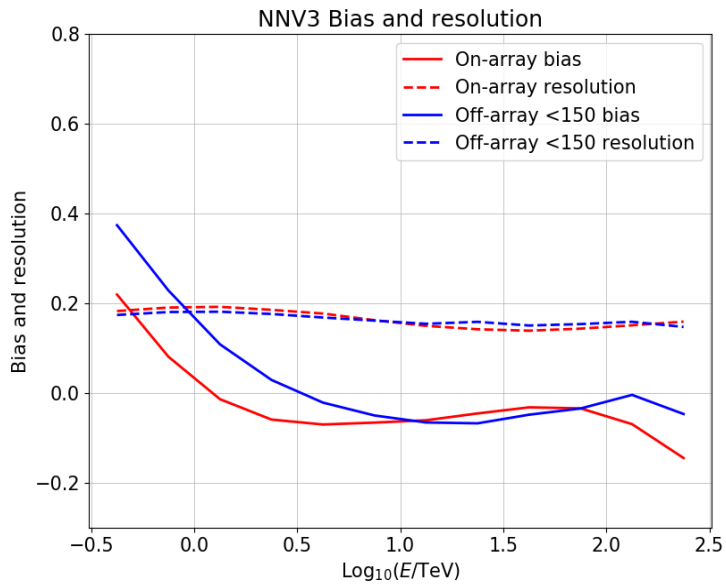
Old Fhit

New Fhit

LDF Amp



No Amp



Vietnam

- January 5th-11th
- Planning to leave January 3rd to get there on time
 - Still need to decide on flights
- Working on first draft of talk
 - 25+5 minutes
 - Will circulate soon