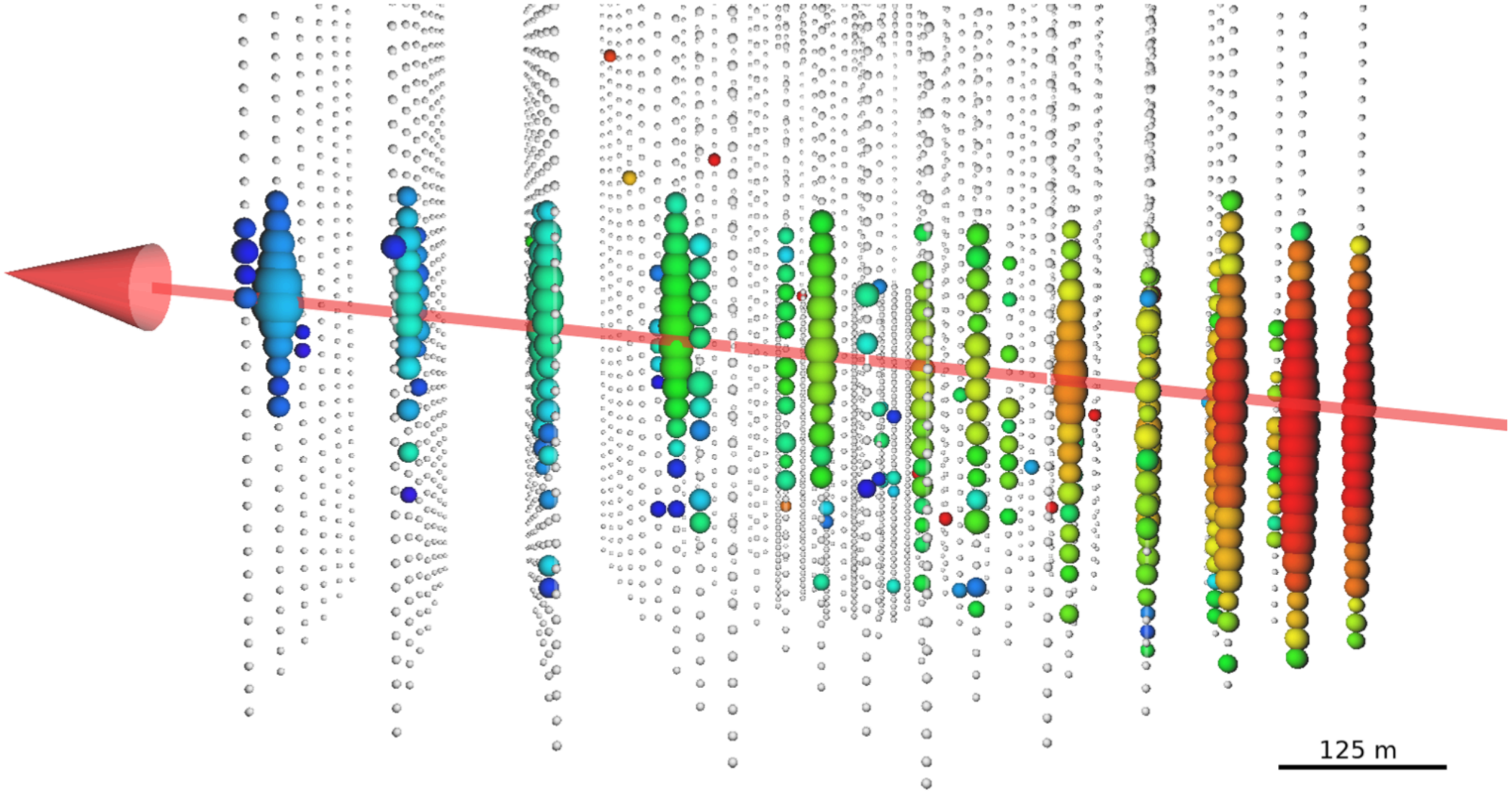
Do the un-simulated local effects affect reconstruction of the event IC20170922A?



Modified configuration

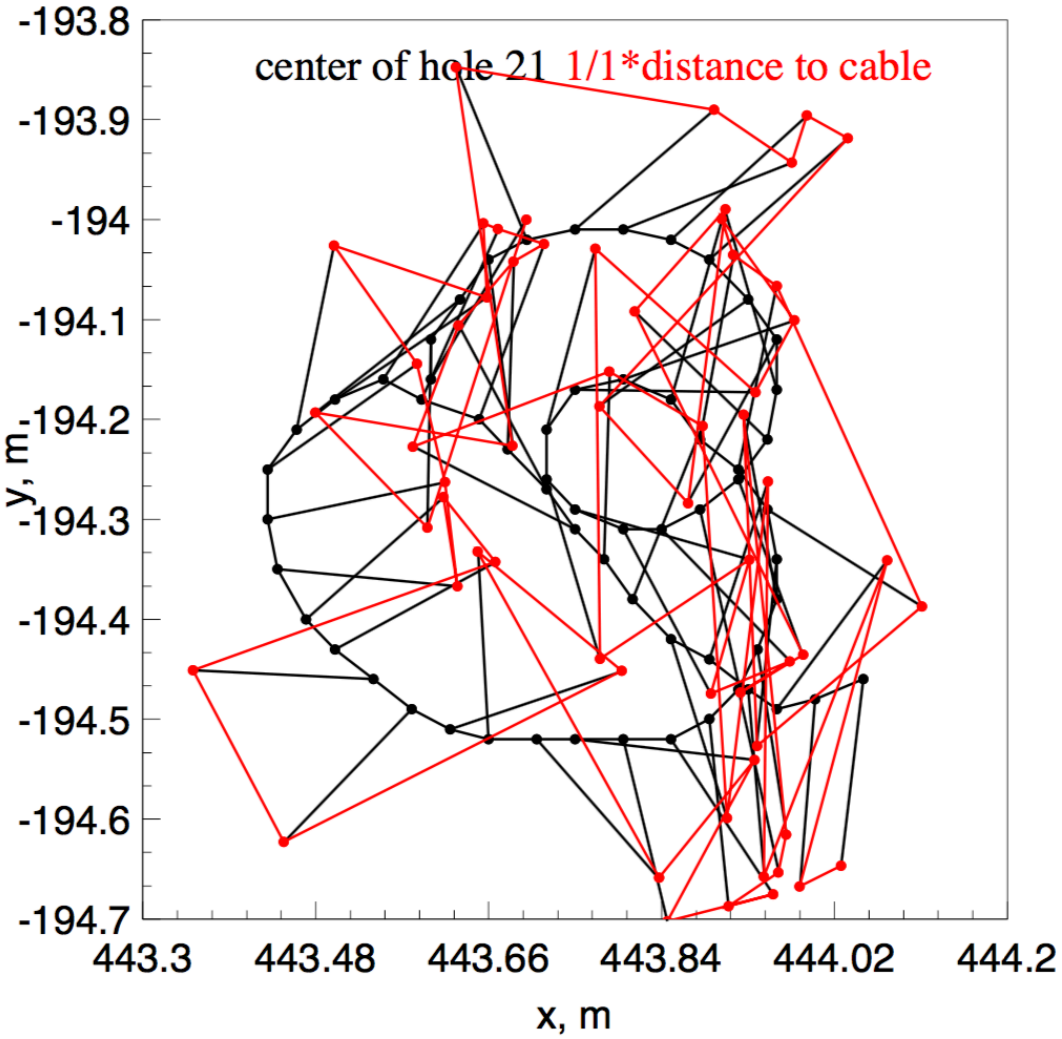
Simulated with ppc, SPICE 3.2 ice:

direct hole ice with central column, effective scattering of 50 cm, DOM oversize=1
DOM sensitivity model from SPICE HD (Martin R.): simulate effective surface of PMT
cable positions according to cable shadow analysis
DOM tilts and RDEs from flasher fits to all-purpose data
DOM xy coordinates modified according to a model presented on next slide

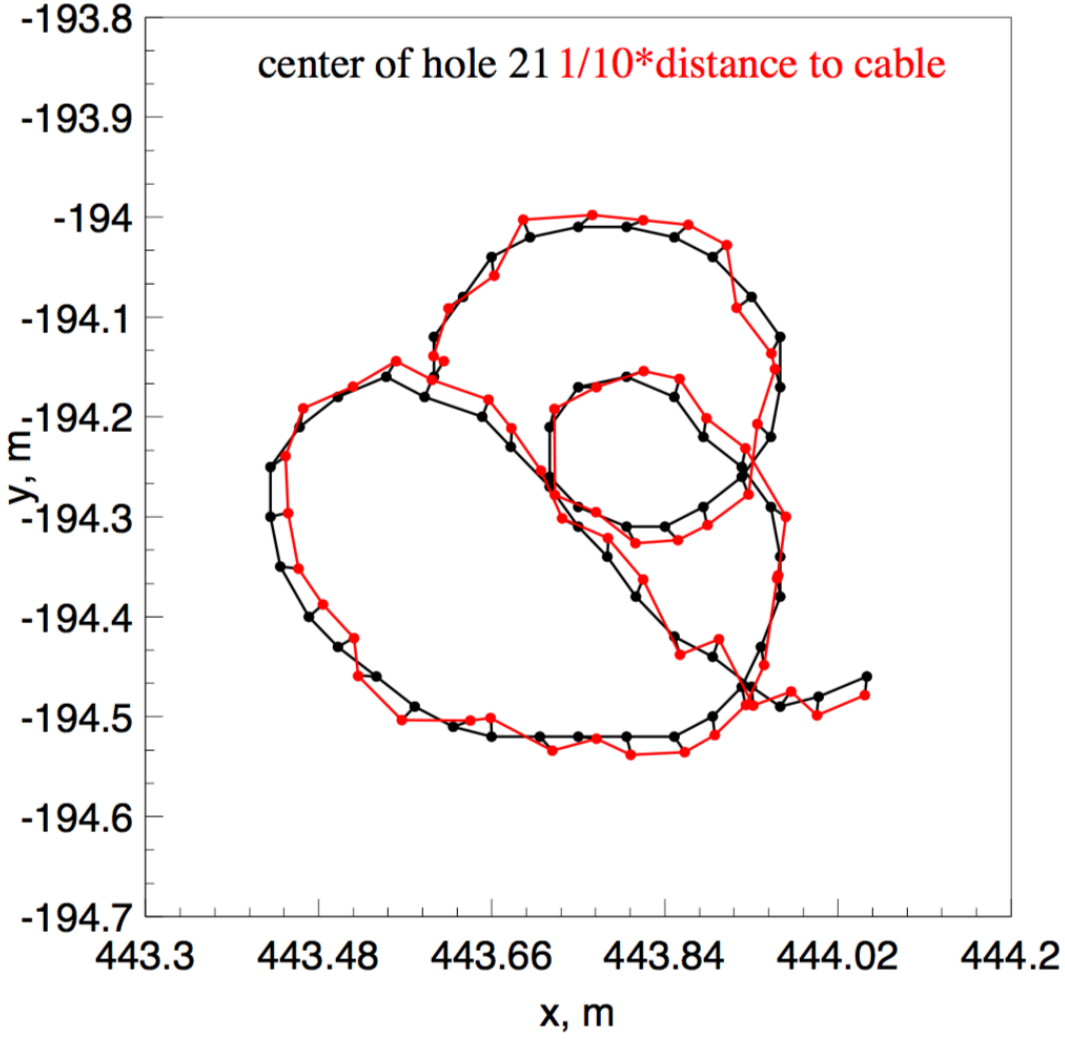
Also for comparison, nominal SPICE 3.2 simulation without modifications above

Simulated 850 events of 300 TeV muon starting 500 outside the detector, reconstructed with spline-fit max configuration seeded with 16-fold muex reconstruction

String 21 has hole coordinates from drill logs

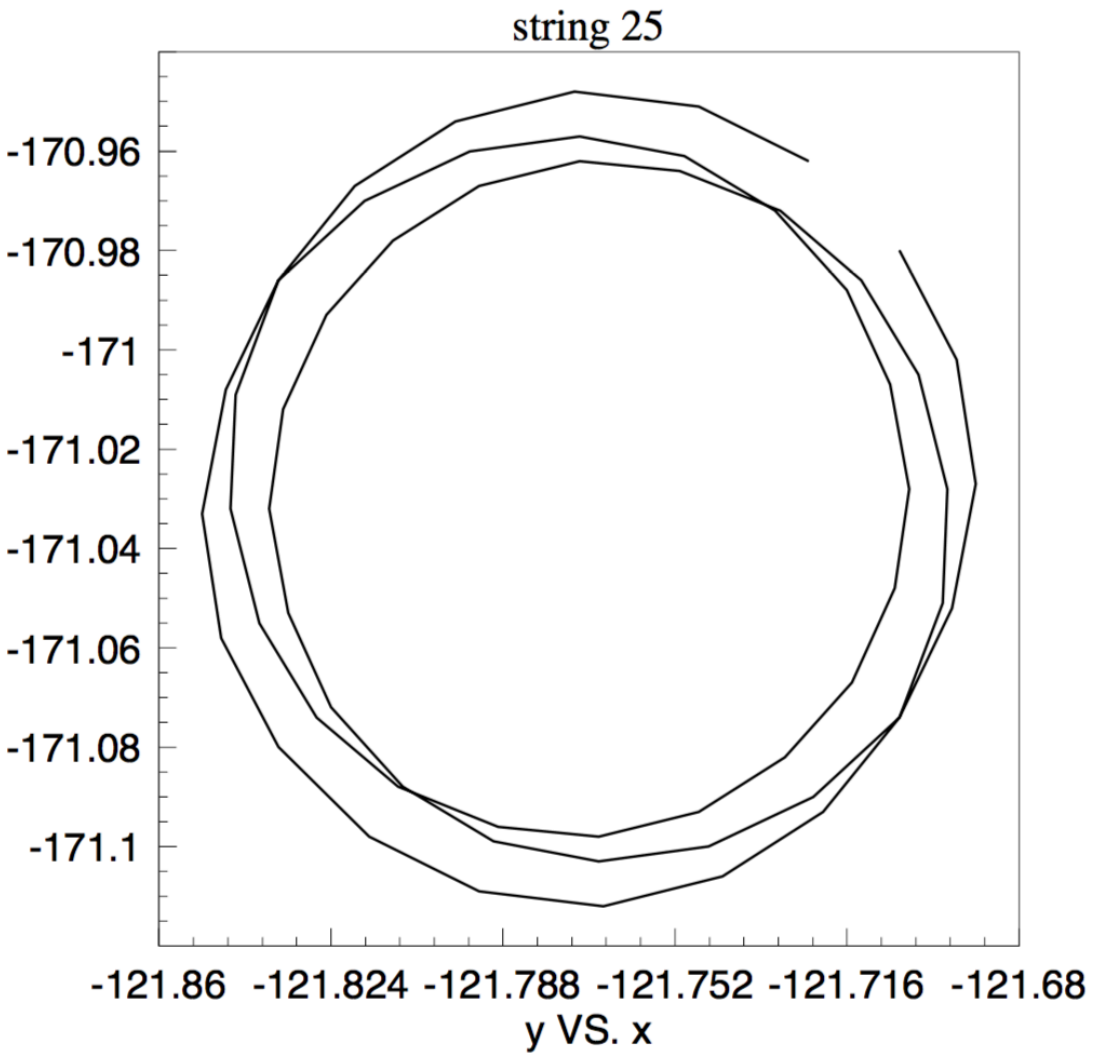


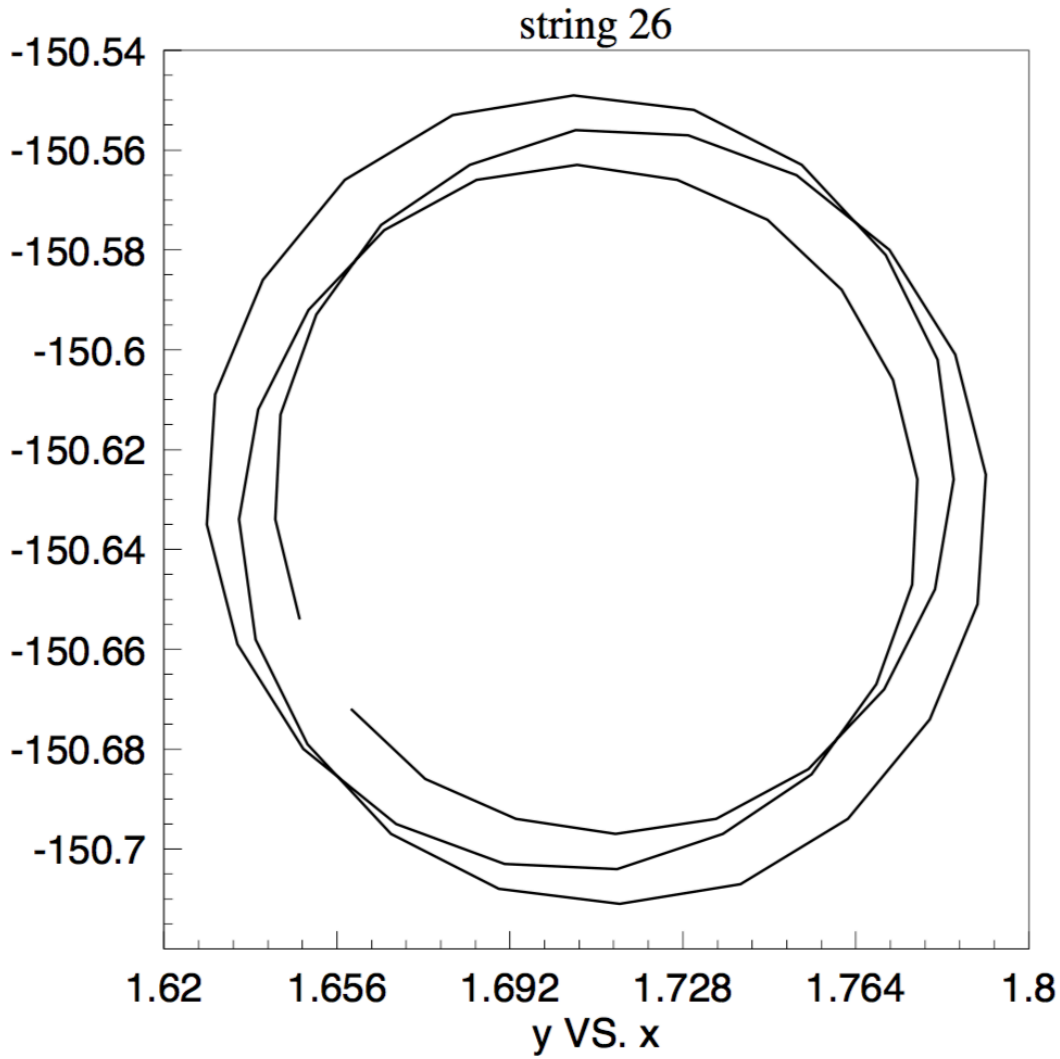
Real distance from DOM center (black, assumed centered in hole) to cable (red)



1/10 distance, shown for visual effect

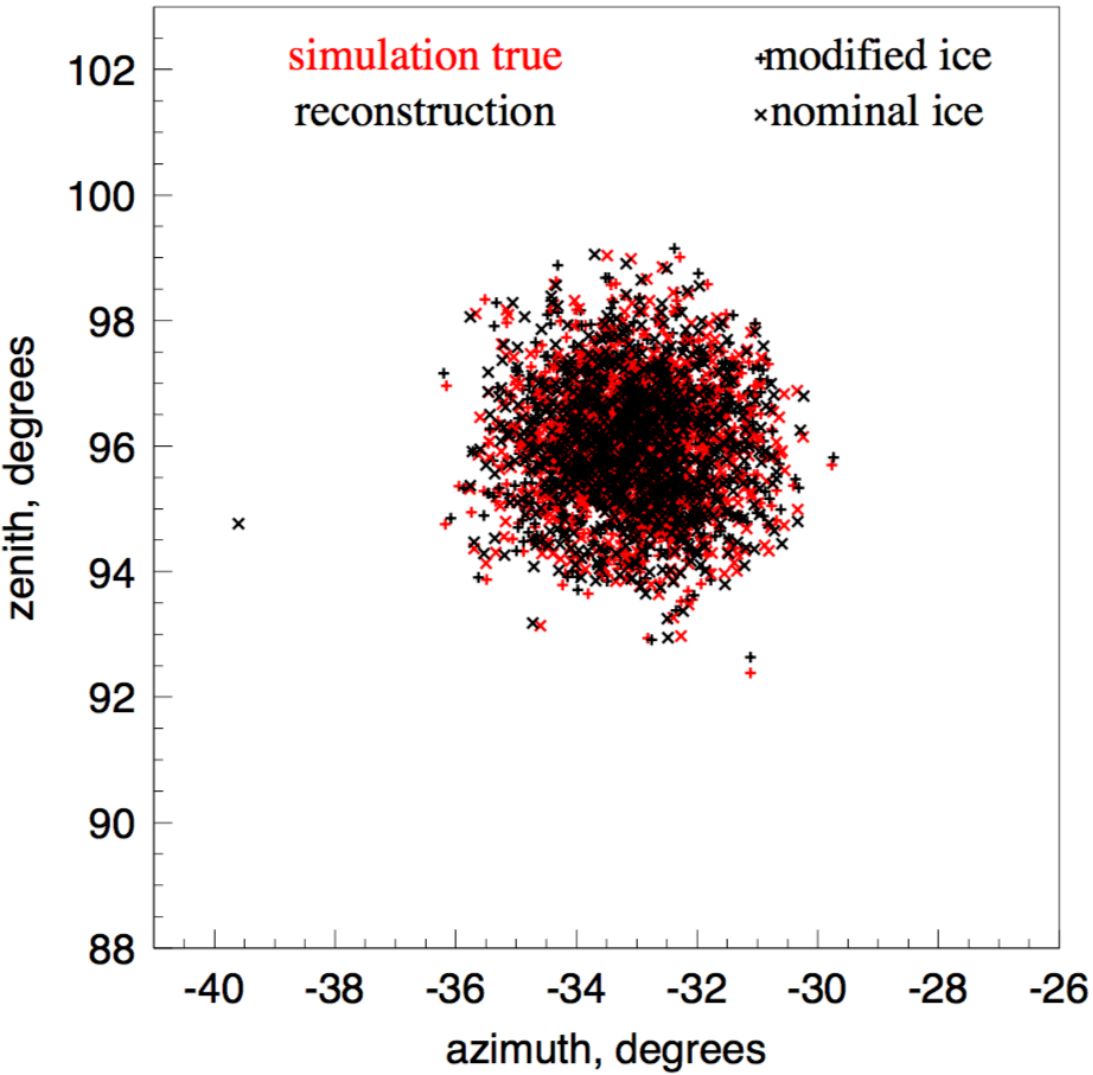
My model of string geometry



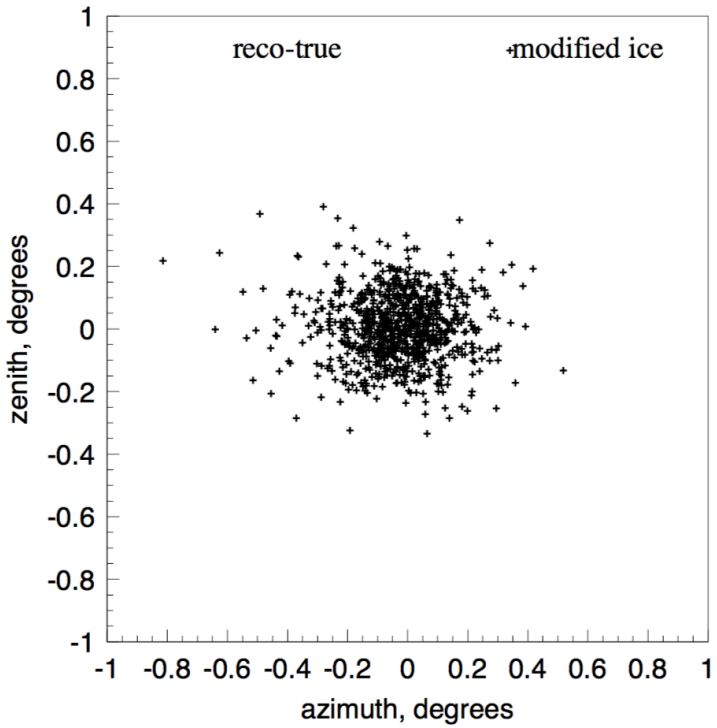


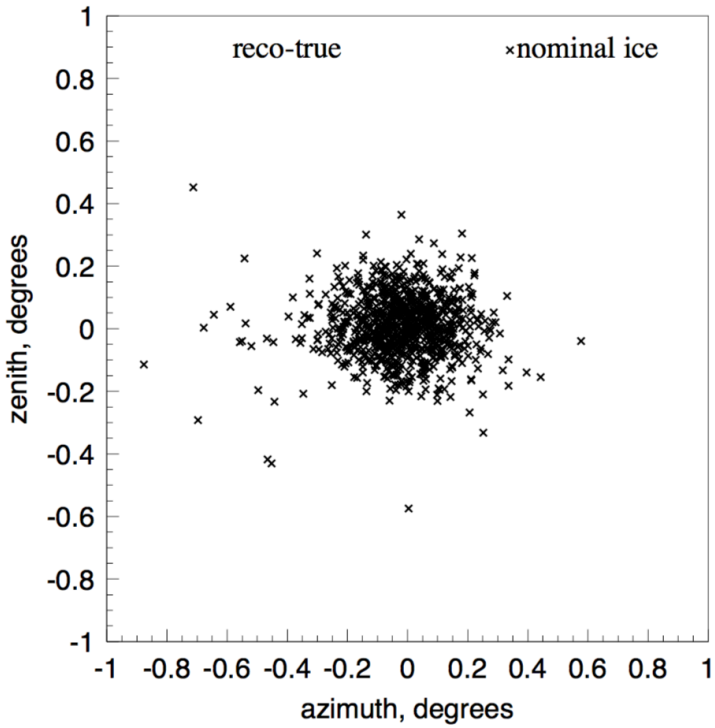
3 revolutions per string, slight variation in distance to center of the hole, phase randomly chosen for each string

Results



Simulated 2d gaussian with 1 degree rms in zenith and azimuth
Track coordinates sampled from a gaussian with 5 m rms in xyz





Result

Resolution for modified configuration is very slightly worse (by a couple %)