

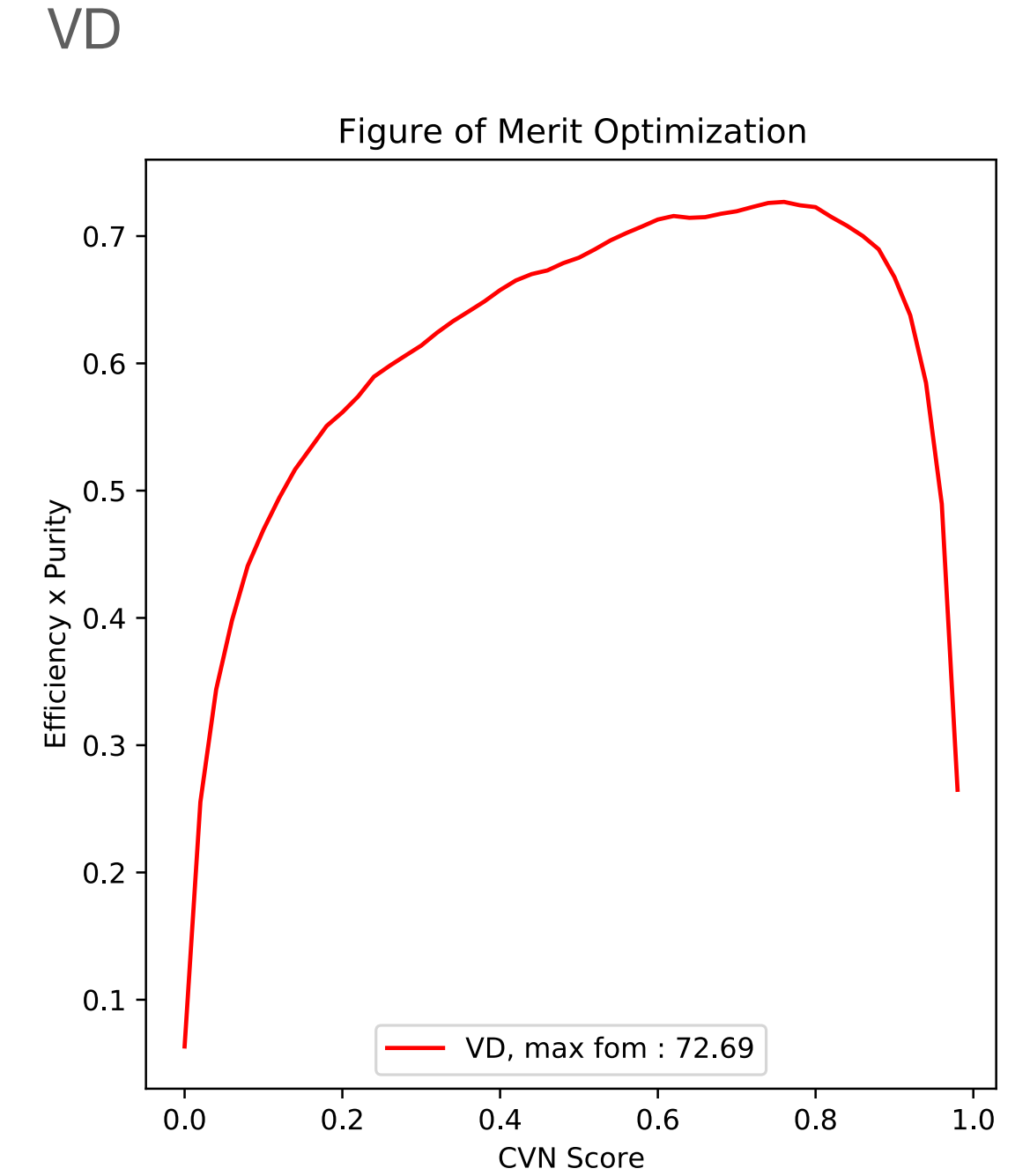
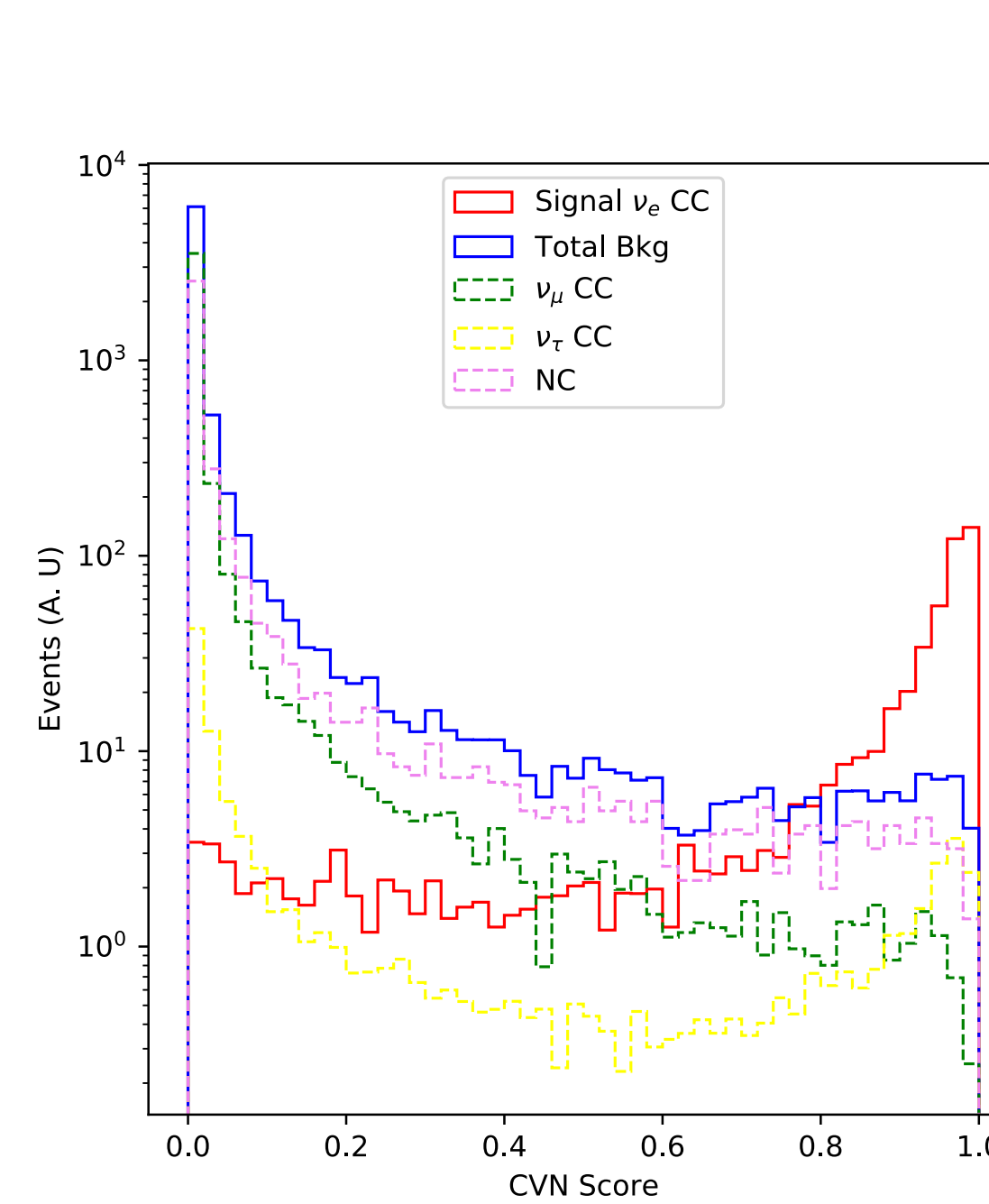
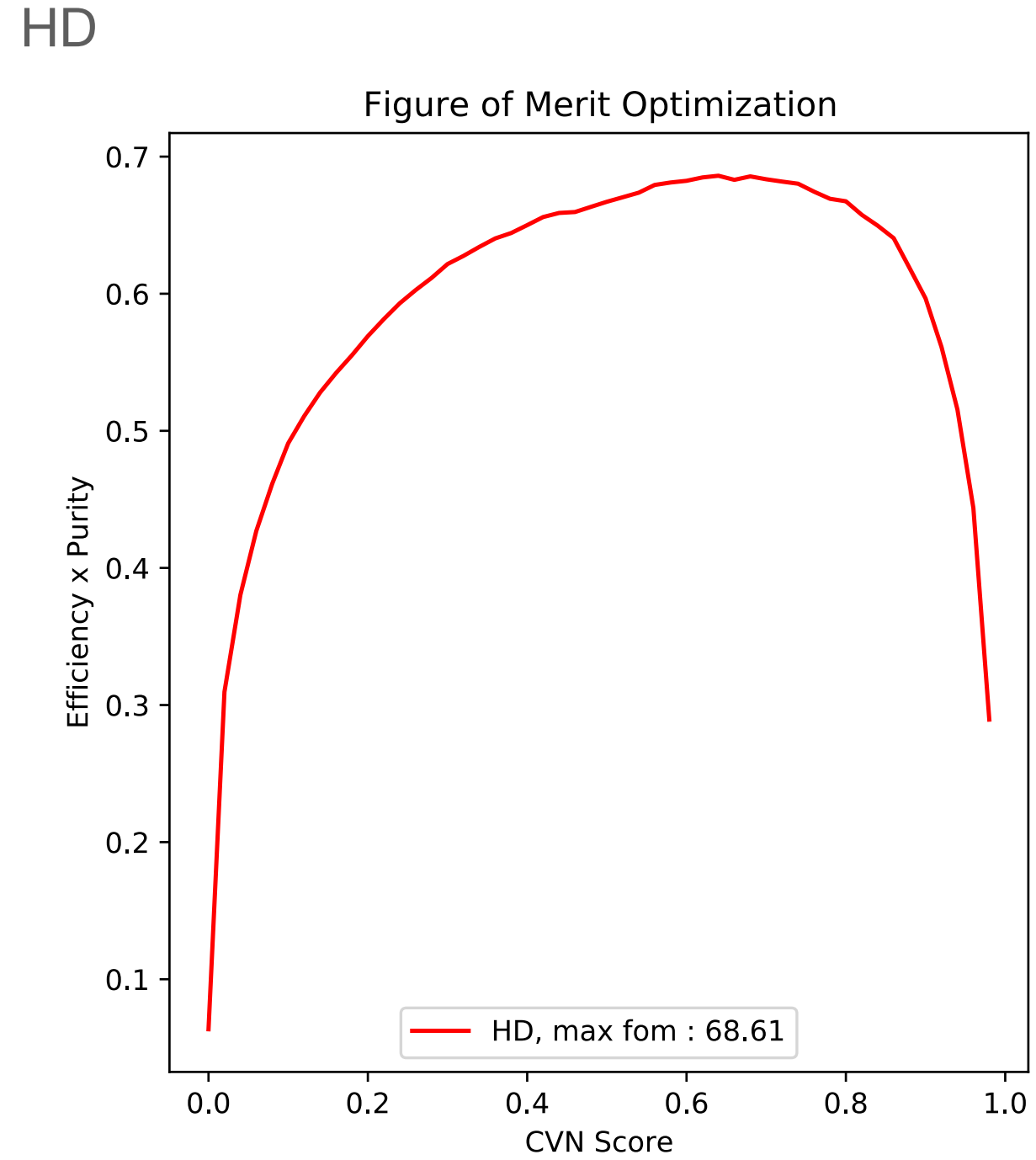
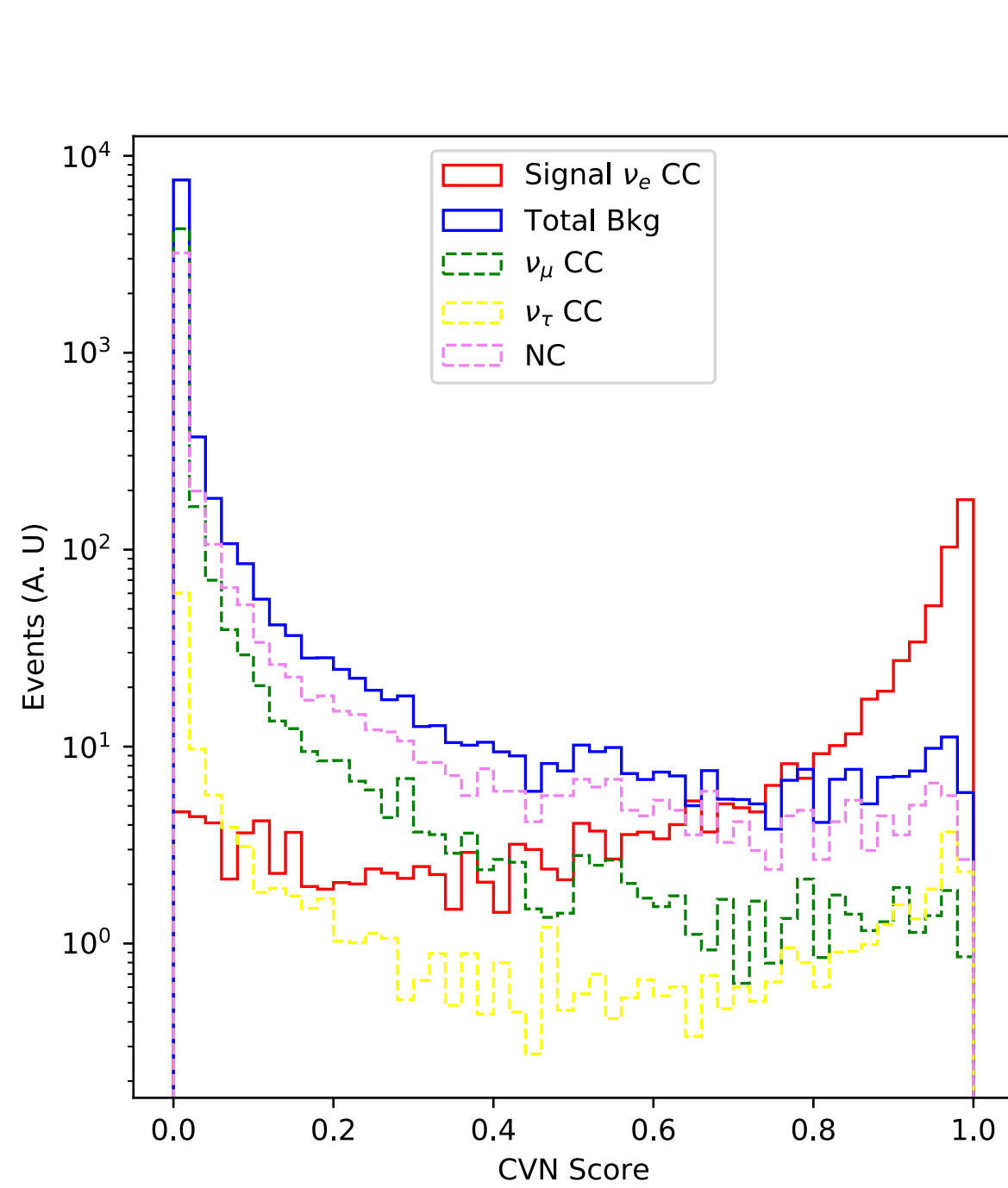
CVN Status (New Production)

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Introduction

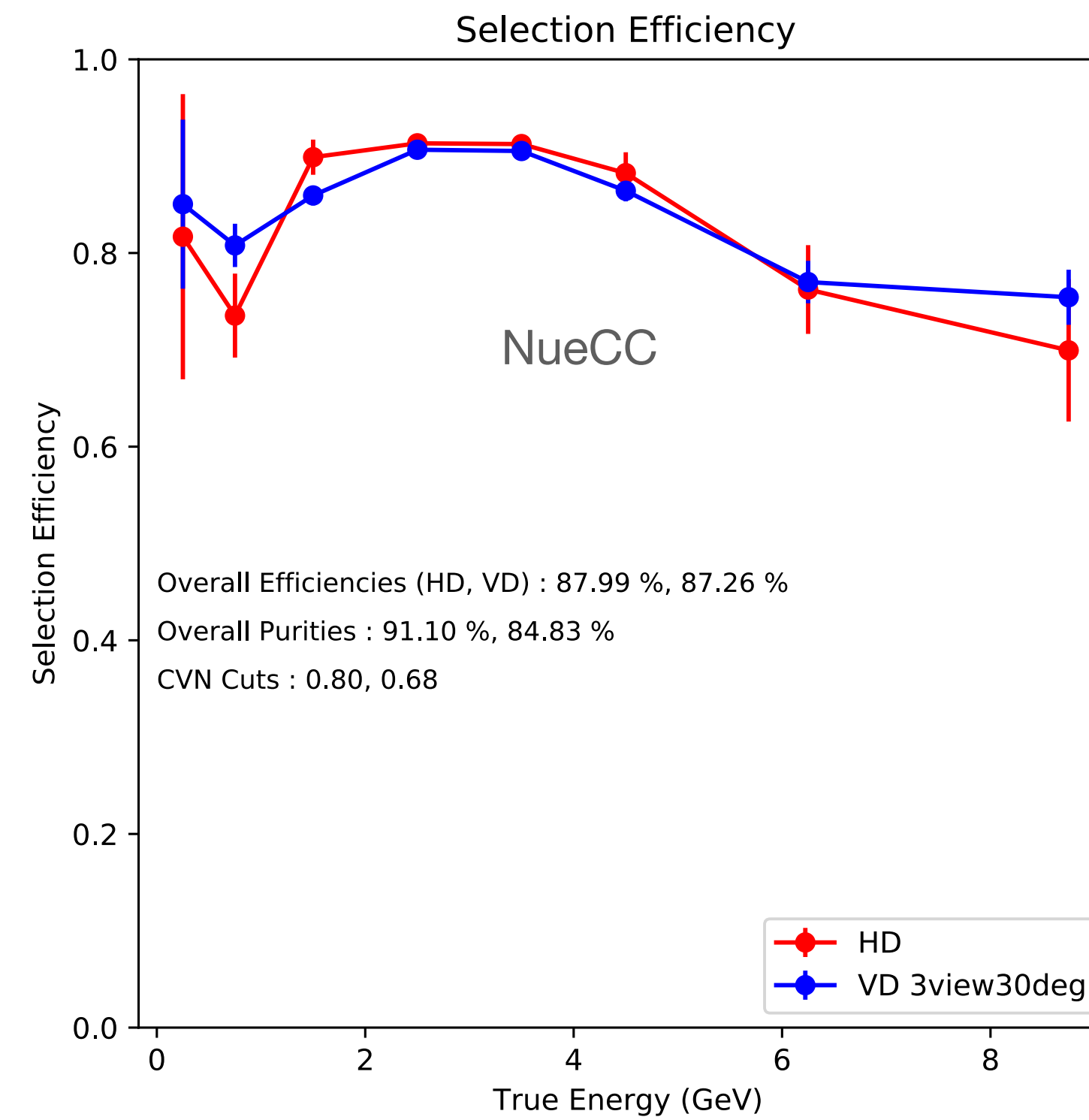
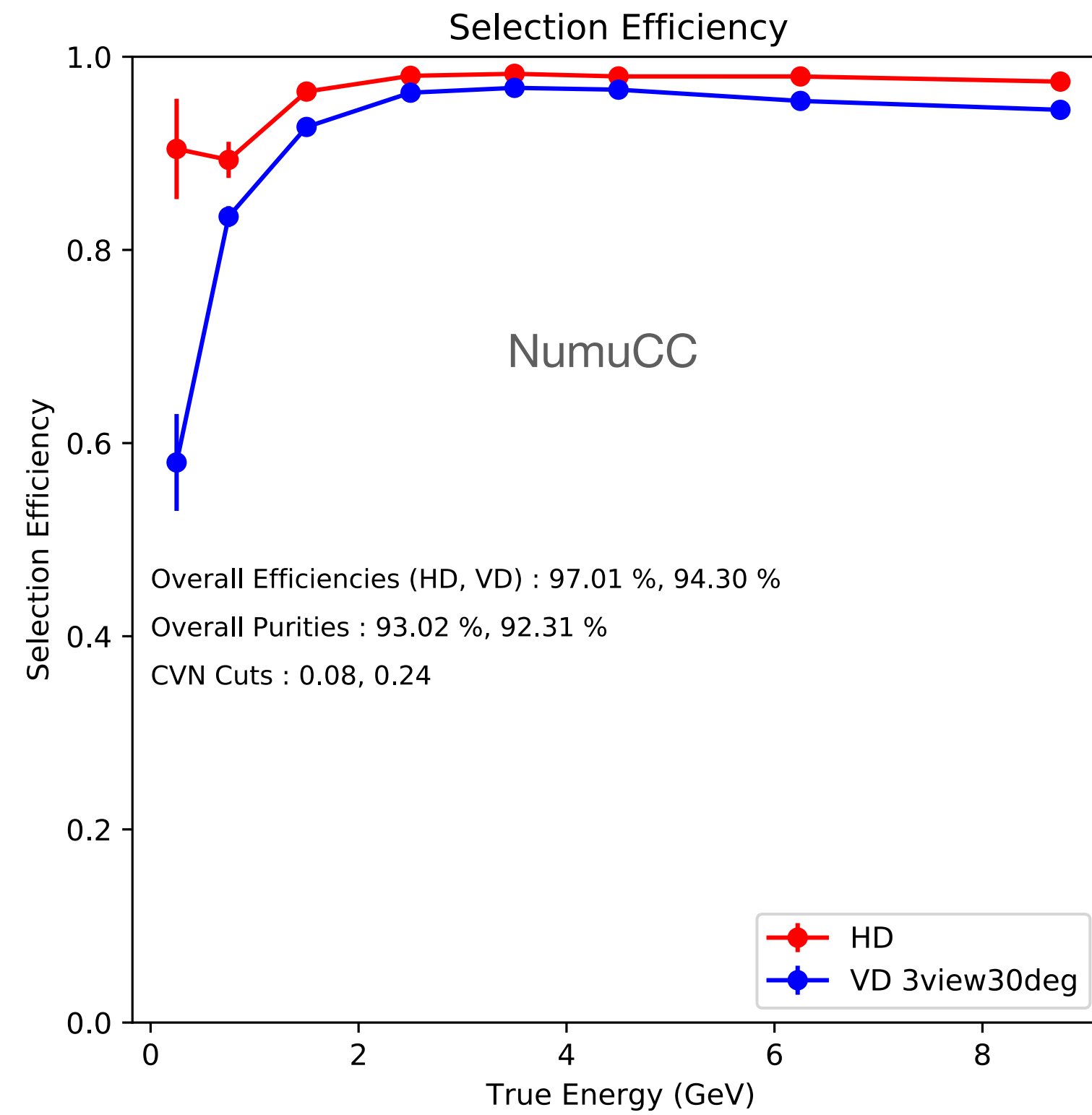
- New samples produced for HD/VD
- Training for HD FHC is done, VD is pretty much converged (I'm letting it run for a couple of more epochs)
 - VD statistics : 3733161
 - HD statistics : 2785330 (~30% less)
 - Numbers after preselection + true vertex inside fiducial volume
- Comparisons + efficiency/purity numbers look good
- Preliminary takeaways : things look pretty good! Maybe some interesting features still

CVN distributions



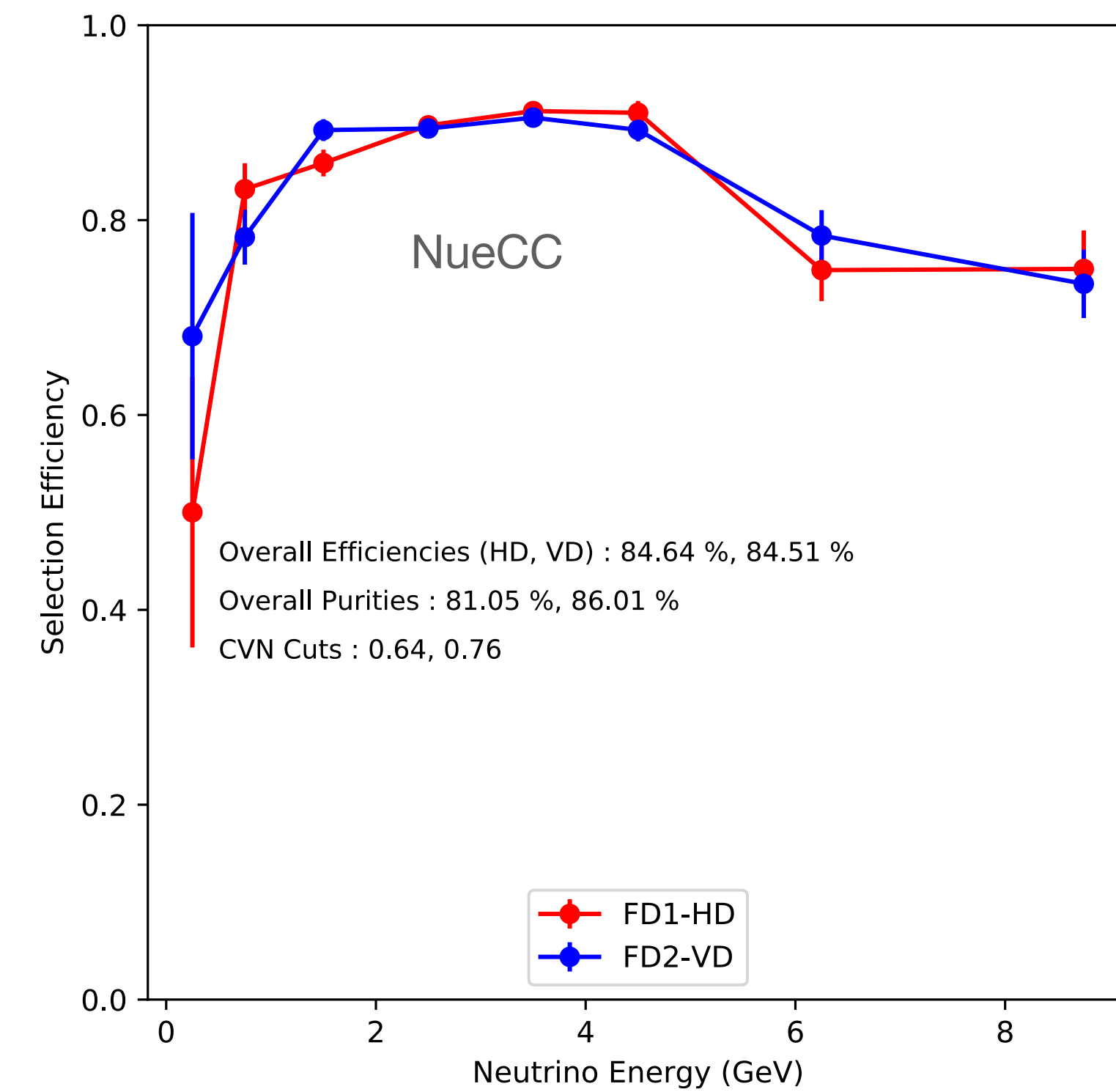
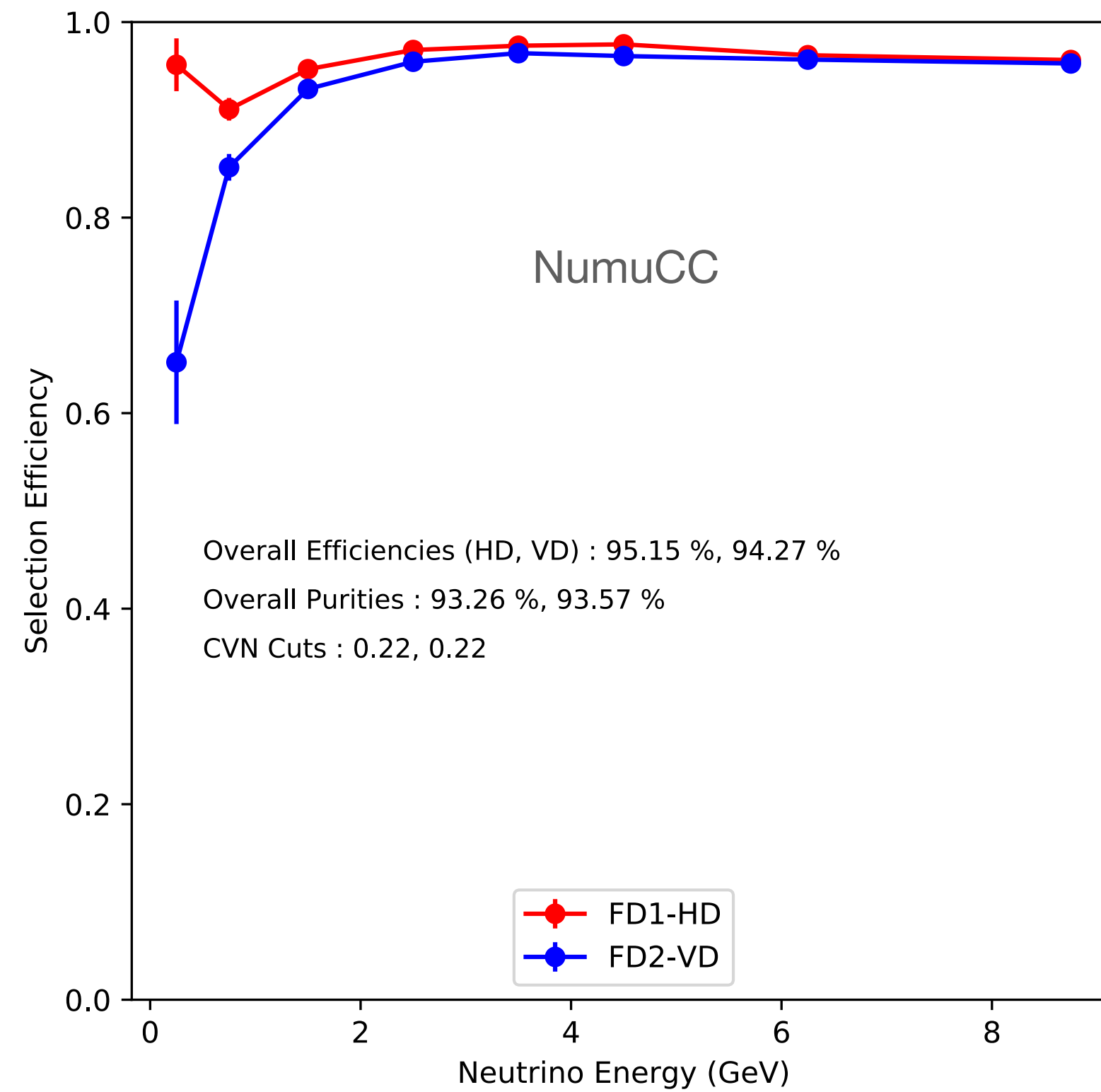
- Distributions look sensible
- Optimizing CVN cut for Efficiency * Purity (FOM)
 - Distributions are oscillated and POT-weighted
 - simple oscillations \sim 2-flavor approximations used, maximal mixing, $+2.4e-3$ for Δm^2

Previous Comparisons



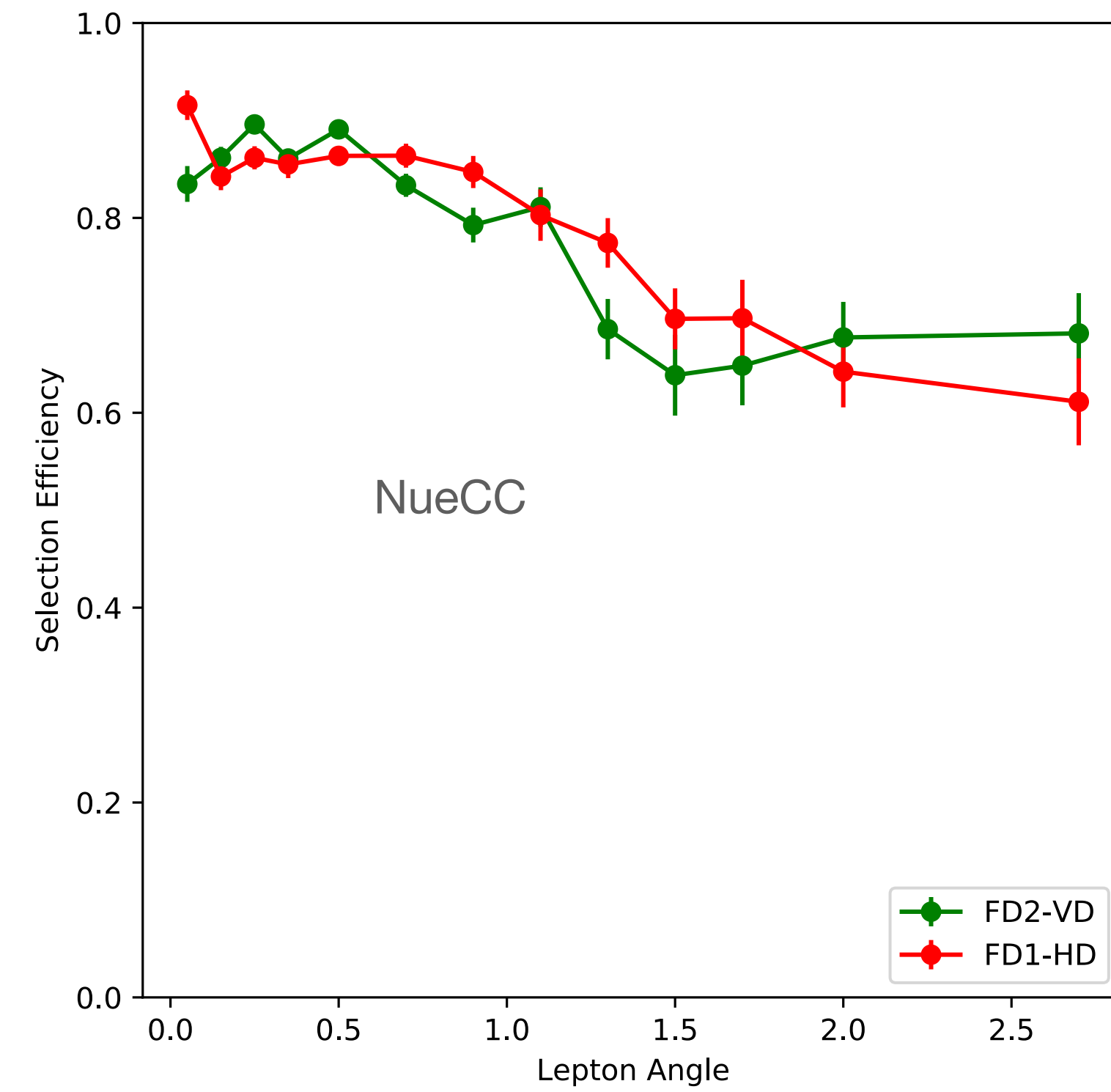
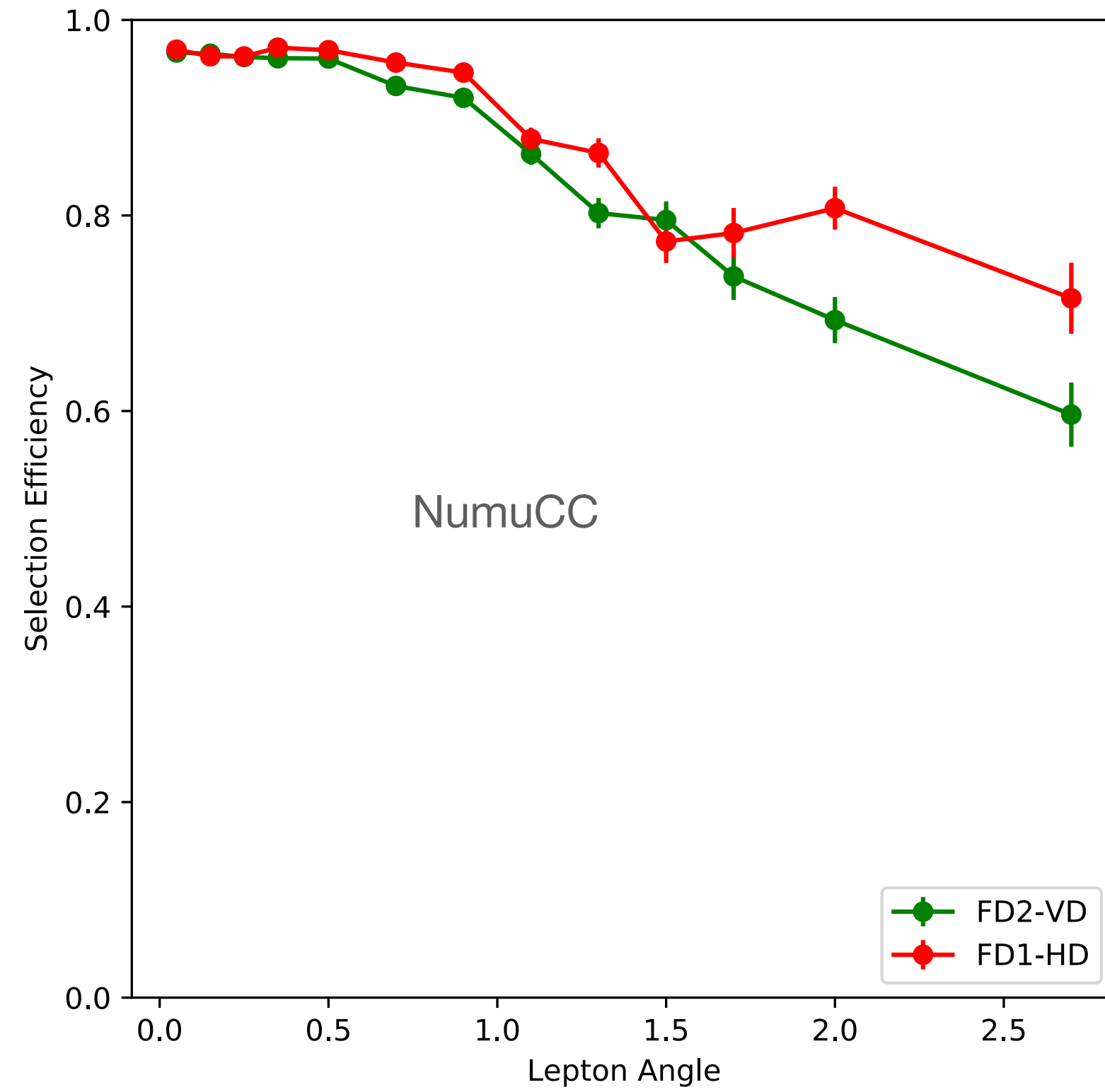
- Last time we were comparing VD trainings on older samples (but with new 2D simulation)
- HD training done on even older MCC11 samples (1D simulation/old GENIE etc)
- Performance was visibly weaker for both nueCC (lower purity) and numuCC (lower efficiency)
 - But not apples to apples

New Comparisons



- This time, performance is much closer both for numuCC and nueCC
- HD drops down
- VD even slightly better than HD (for nueCC) presumably because of more statistics
- numuCC still has a feature of efficiency drop-off at low energies for VD vs HD

New Comparisons



- This time, performance is much closer both for numuCC and nueCC
- numuCC still has a feature of efficiency drop-off at low energies for VD vs HD
- Some small differences in performance at larger angles

Next Steps

- Run VD FHC for a bit more (don't think it'll change plots/features shown here)
- RHC trainings
- Drill down into the low energy difference a bit more
 - Interaction types, final state hadrons etc
- Any others?