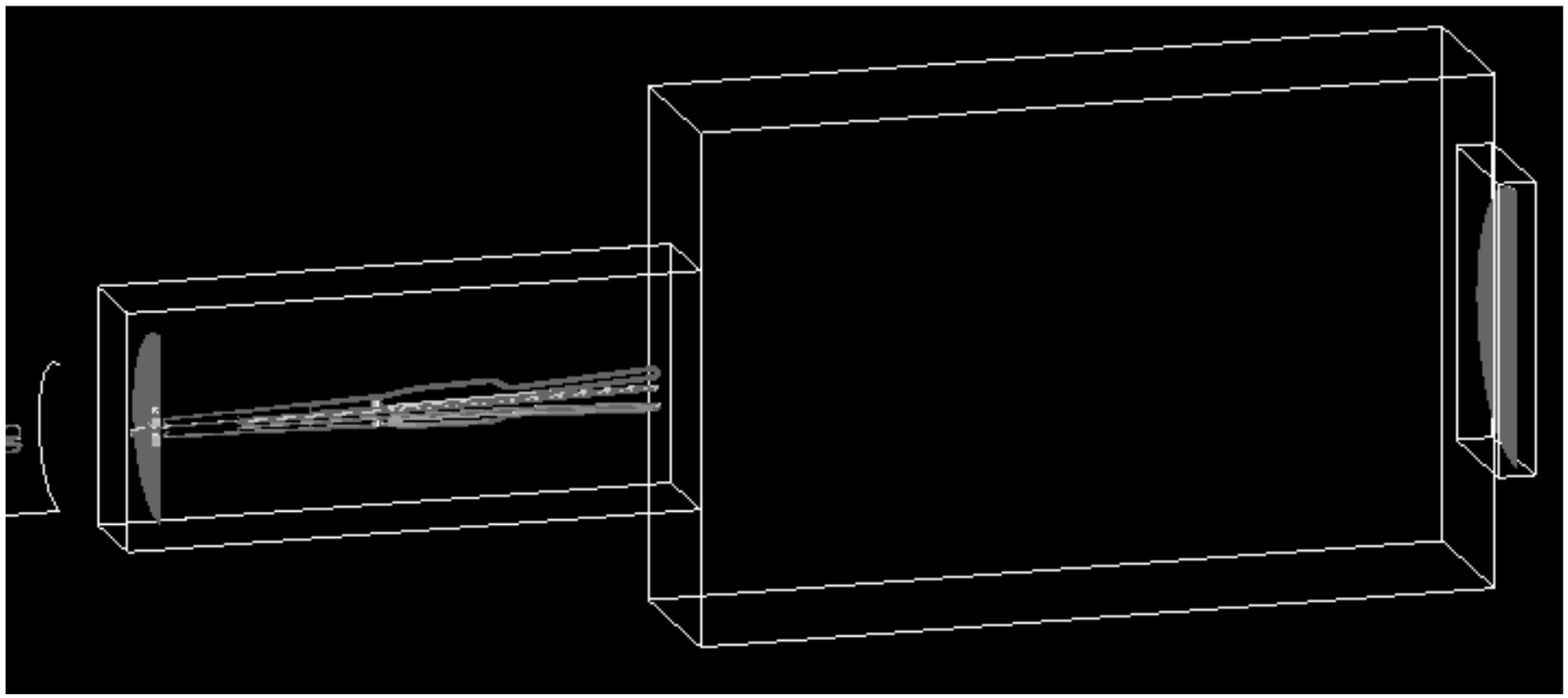
Air vs Vacuum path

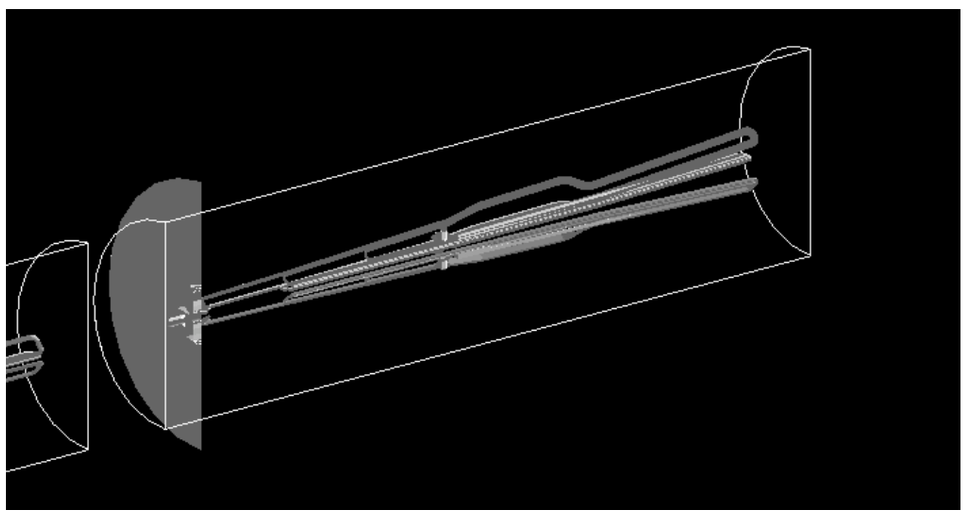
Ciprian Gal UVa

Simulation setup

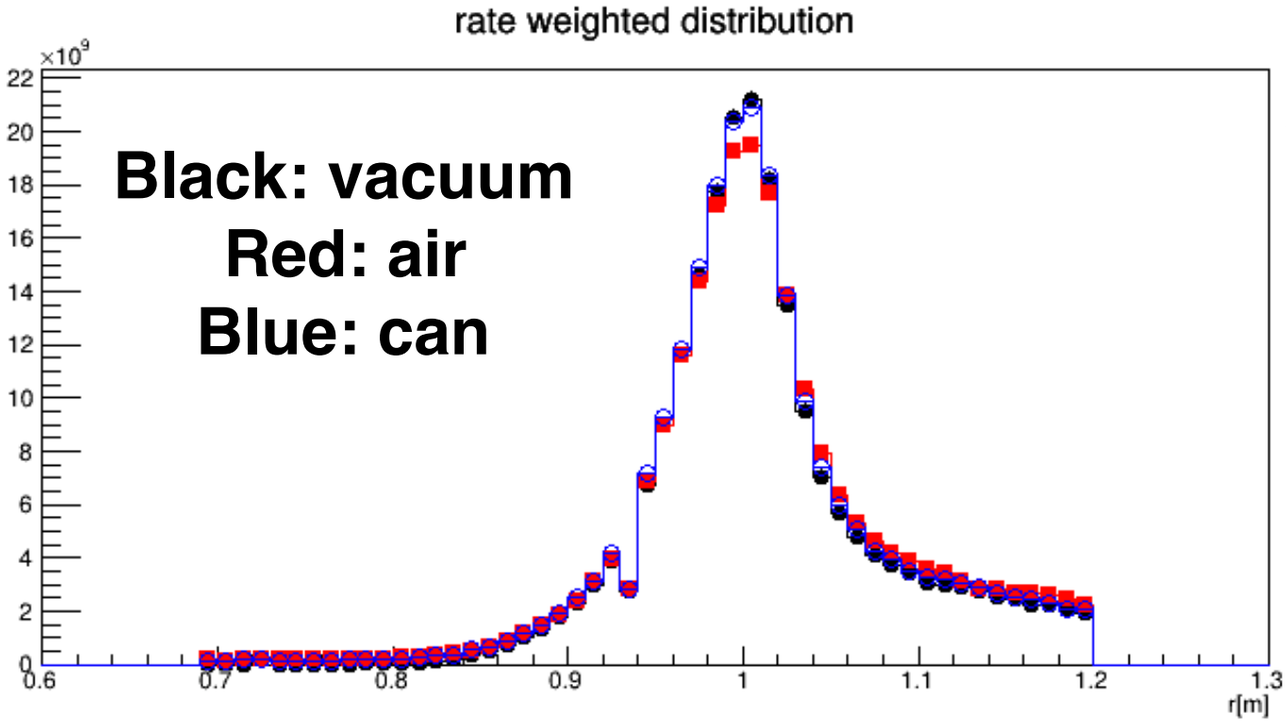


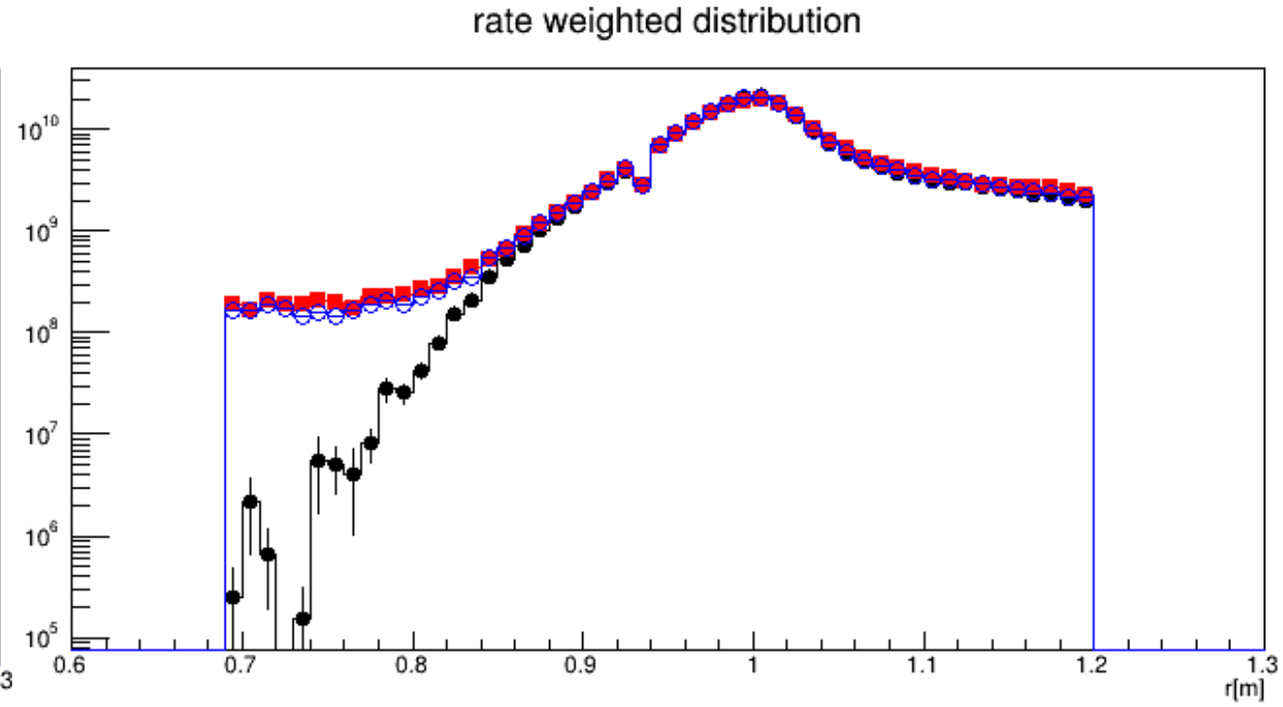
- Cameron setup 3 different files with a volume between the magnet and the detector which can be changed from air to vacuum on a different branch of remoll (https://github.com/JeffersonLab/remoll/tree/vacuum_test)
  - filled with vacuum everywhere (should produce the same output as the master branch)
  - one that has air in the big box
  - one that has air around the magnet and in the box

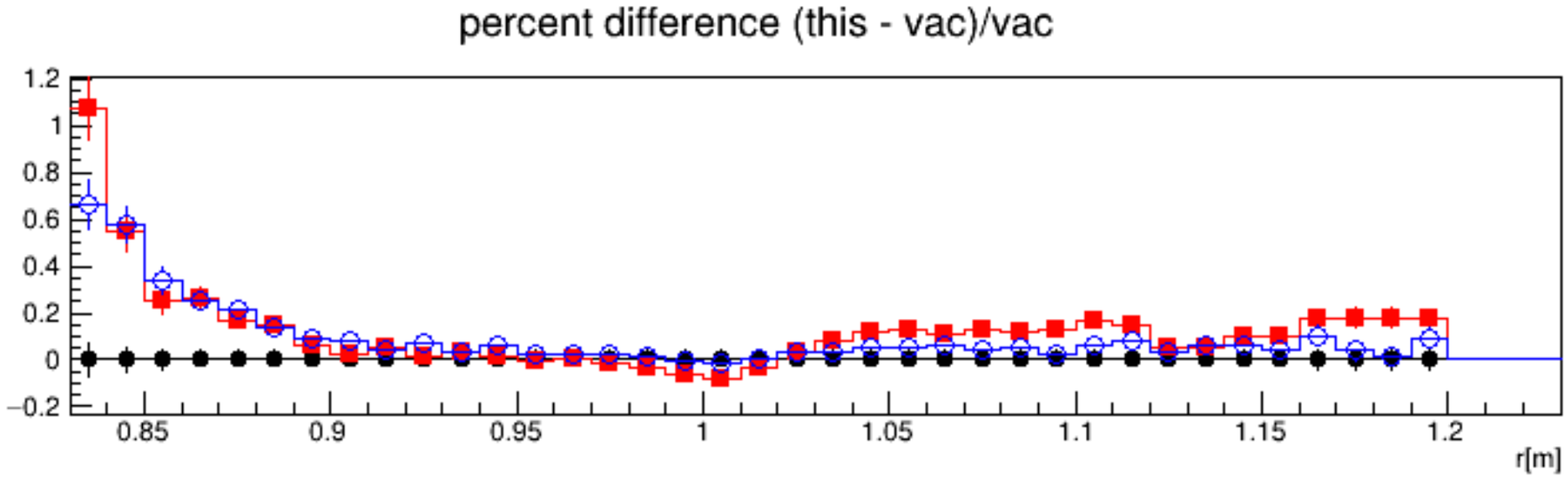
master setup



Moller rates

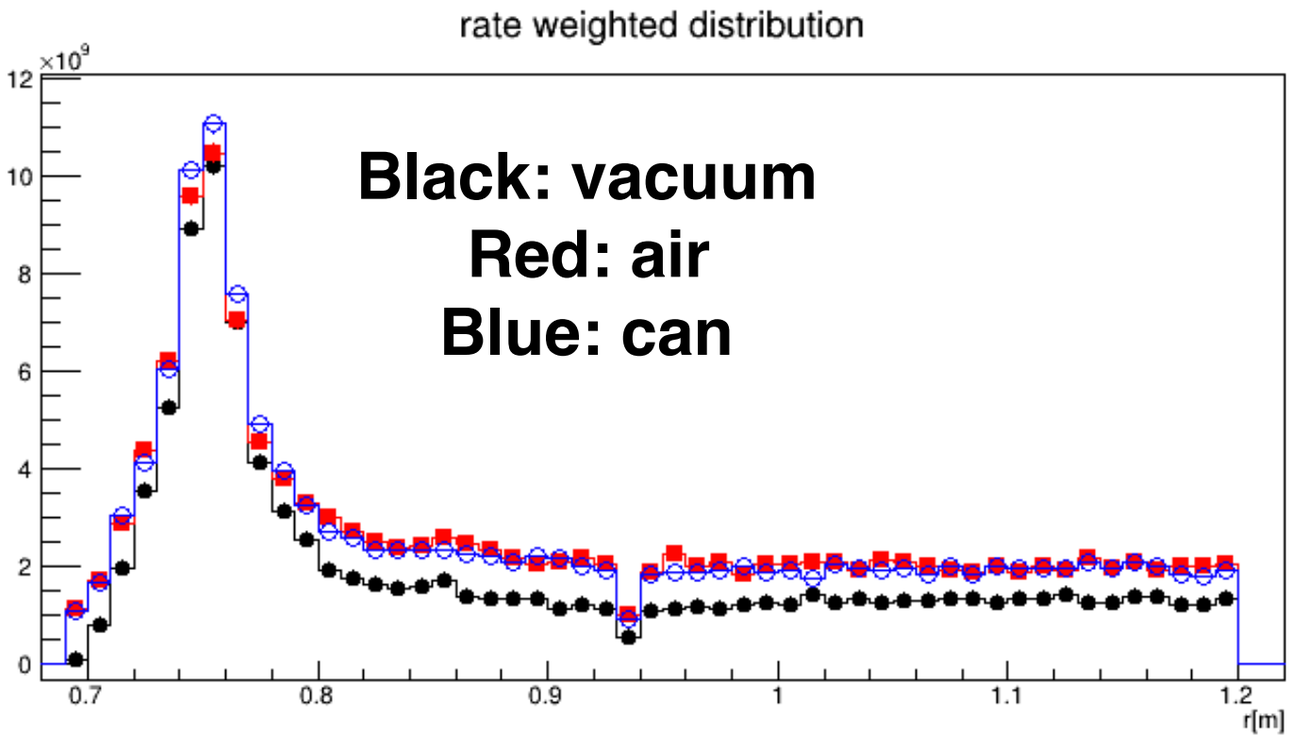




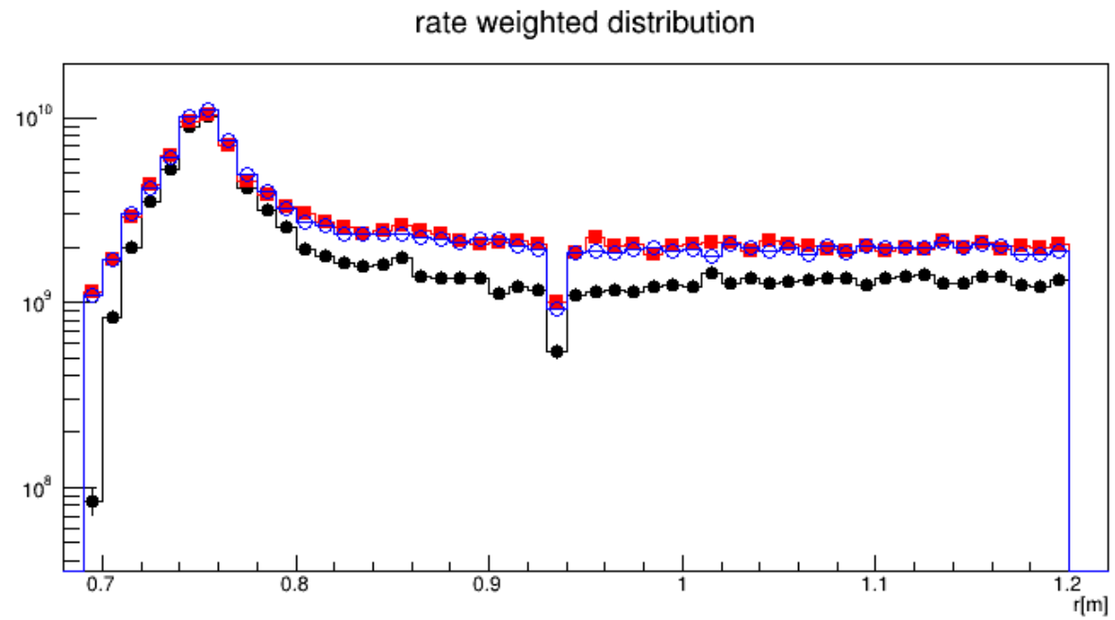


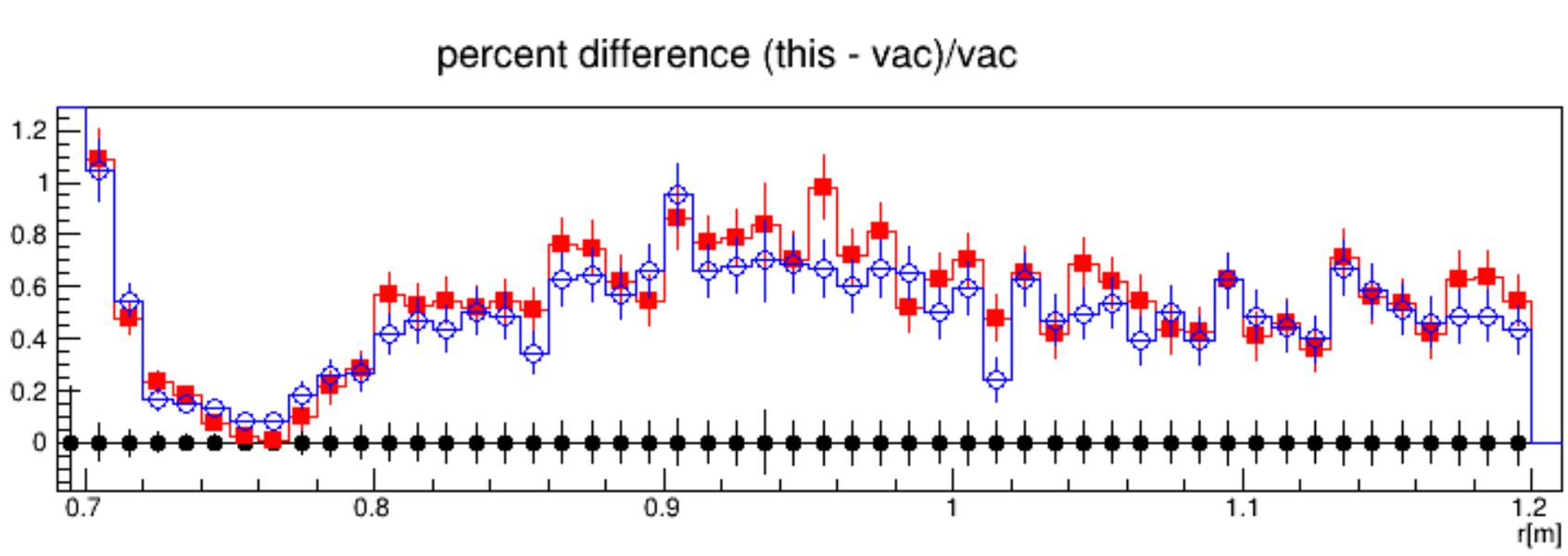
- Besides the increase at low radius we can see there is some variation in the high rate detectors

ep Elastic rates



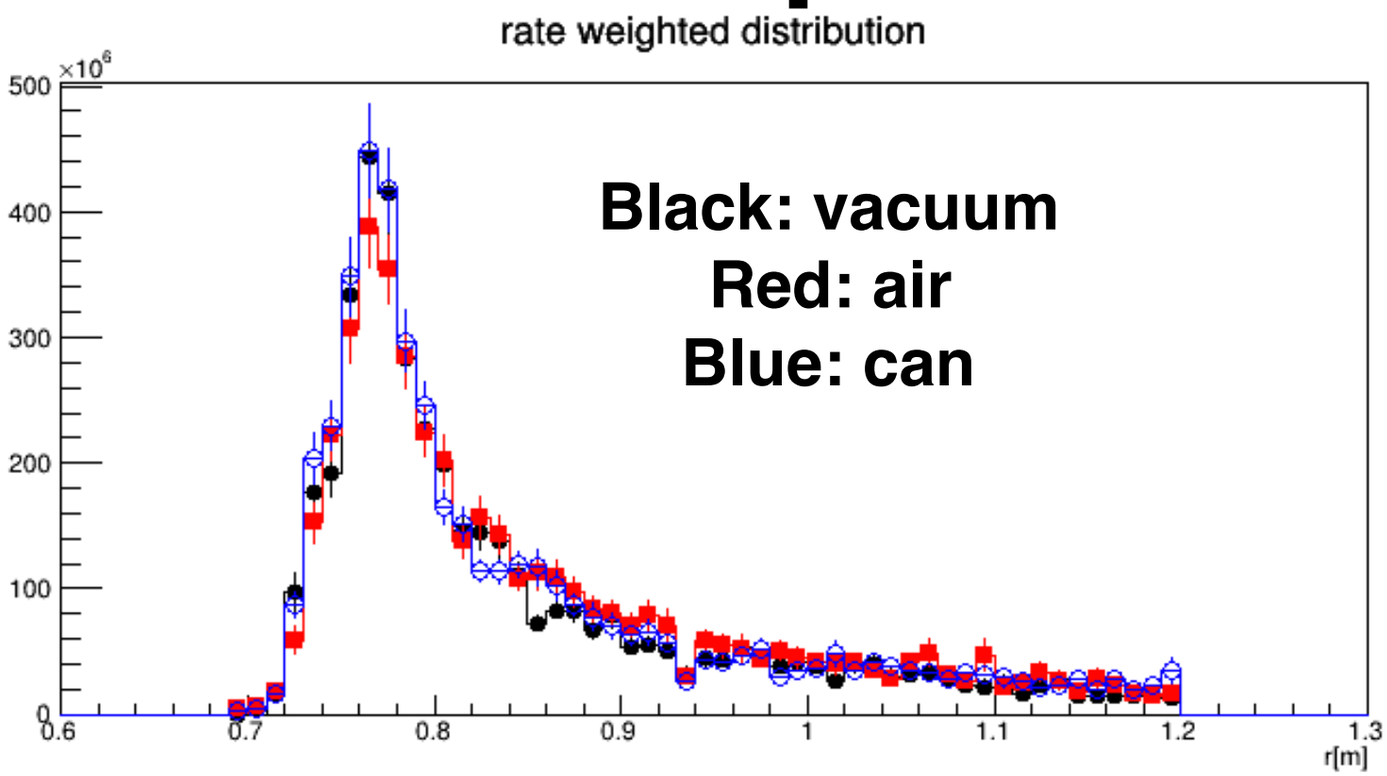
Black: vacuum
Red: air
Blue: can



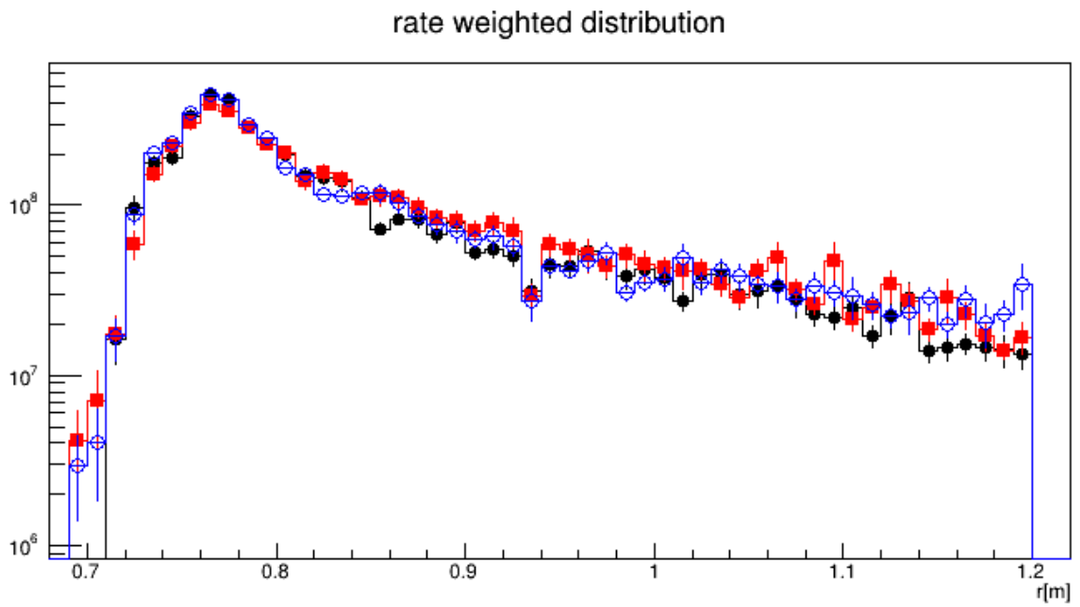


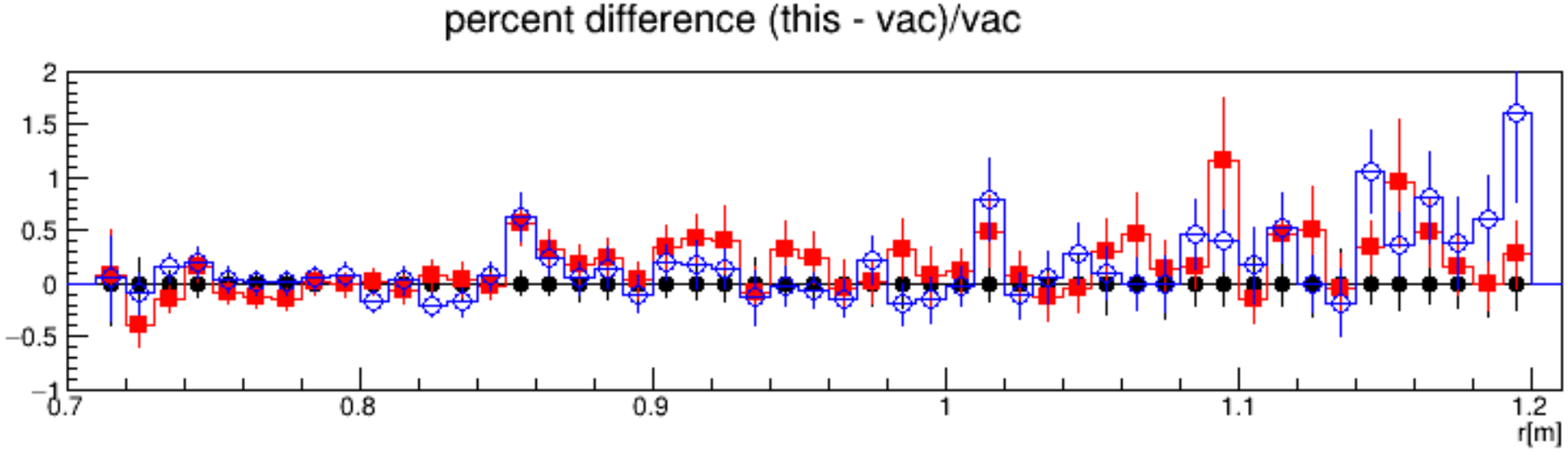
- We can see that we get an almost doubling of the rate for most of the radius

ep Inelastic rates



Black: vacuum
Red: air
Blue: can





- For the inelastics i will have to look at the total rate for each detector to be able to tell a difference

Next

- Working on streamlining the Al window simulation (pushed a couple of branches that Yuxiang had on the SB cluster)
  - this will allow to add those simulations to this analysis and do the unfolding so that we can get clearer numbers for each detector

- The analysis for this was done with a module I added to the bkgAna branch (plan is to import this to the main branch so that people can use it in the future)