

Mu2e-II Workshop: Simulation Group Update

Sophie Middleton
Yuri Oksuzian
Lisa Goodenough

Recent Progress

- General: Code updated to latest Mu2e Offline which allows us to benefit from recent code infrastructure for MDC2020 campaign.
- Geometry:
 - Tracker: Updated straw width and removed gold only - PR in progress
 - Calorimeter: Good progress being made to characterize the Barium Fluoride crystals - PR due shortly
- Validation:
 - Produced some test samples with earlier code which includes only Production Target and Removal of p-bar windows (same calo and tracker as Mu2e)

Next Steps

- Merge geometry PRs
- Update branch
- Contact Ray for “musing”
- Run validations
- Run large scale production
- Organize analysis meeting:
 - Please contact us to contribute

Towards the White Paper

- We need to get the samples (mixed) made for each background
 - Will utilize the MDC2020 infrastructure - begin shortly - will take a few weeks
 - Est. October 2021
- We need to estimate contributions from each:
 - Can begin once we have samples
 - Depends on people-power here, each channel will be a few weeks work (estimated)
 - Est. December 2021 - Jan 2022
- This will feed into our final sensitivity estimate, the calculation of which will include some statistical studies:
 - Will need to be finished by mid-Feb at very latest in case of any corrections being needed

Plan for White Paper

- Particle Fluxes
- Radiation Dose
- Stopping Target Studies
- Backgrounds:
 - DIO
 - RPC
 - RMC
 - Cosmics
- Summary table
- Systematics
- Sensitivity estimate/BFUL and justification of method used (long section)
- Future studies/considerations
- Conclusions

Summary

- Geometry almost ready
- Cross-checks needed before final large scale production
- Estimate samples ready by end Oct. 2021
- Following this we will need help with analysis
- Must have results by Jan/Feb latest