



2016/05 Settings



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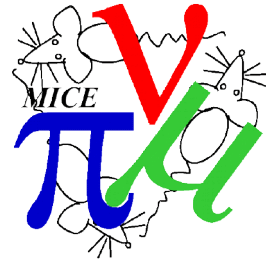


2016/05



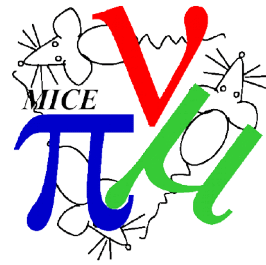
- ISIS User run 2016/05
 - 14th February to 31st March
 - Lithium Hydride absorber
 - Flip mode
 - M2D will not be powered initially
- Plan to run
 - Beta function scan at 140 MeV/c (3 settings)
 - Optics performance best at 140 MeV/c
 - But TKD performance is a concern
 - Momentum scan
 - Nb: some optics settings provided by Ao, with thanks

Parameter space plots

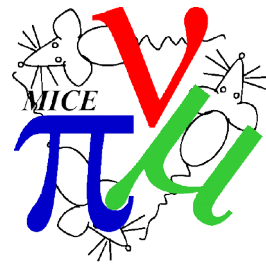


- Using Rogers simplified Step IV geometry
 - Track many 1k muon samples, each with a different current set
 - 6 mm muon beam, assume initially matched
 - Three sets at 140 , 200, 240 MeV/c
 - Flip mode
- Plot resultant parameter space – transmission vs beta at AFC
 - Beta AFC is a pretty good predictor of emittance reduction at AFC

Performance plots

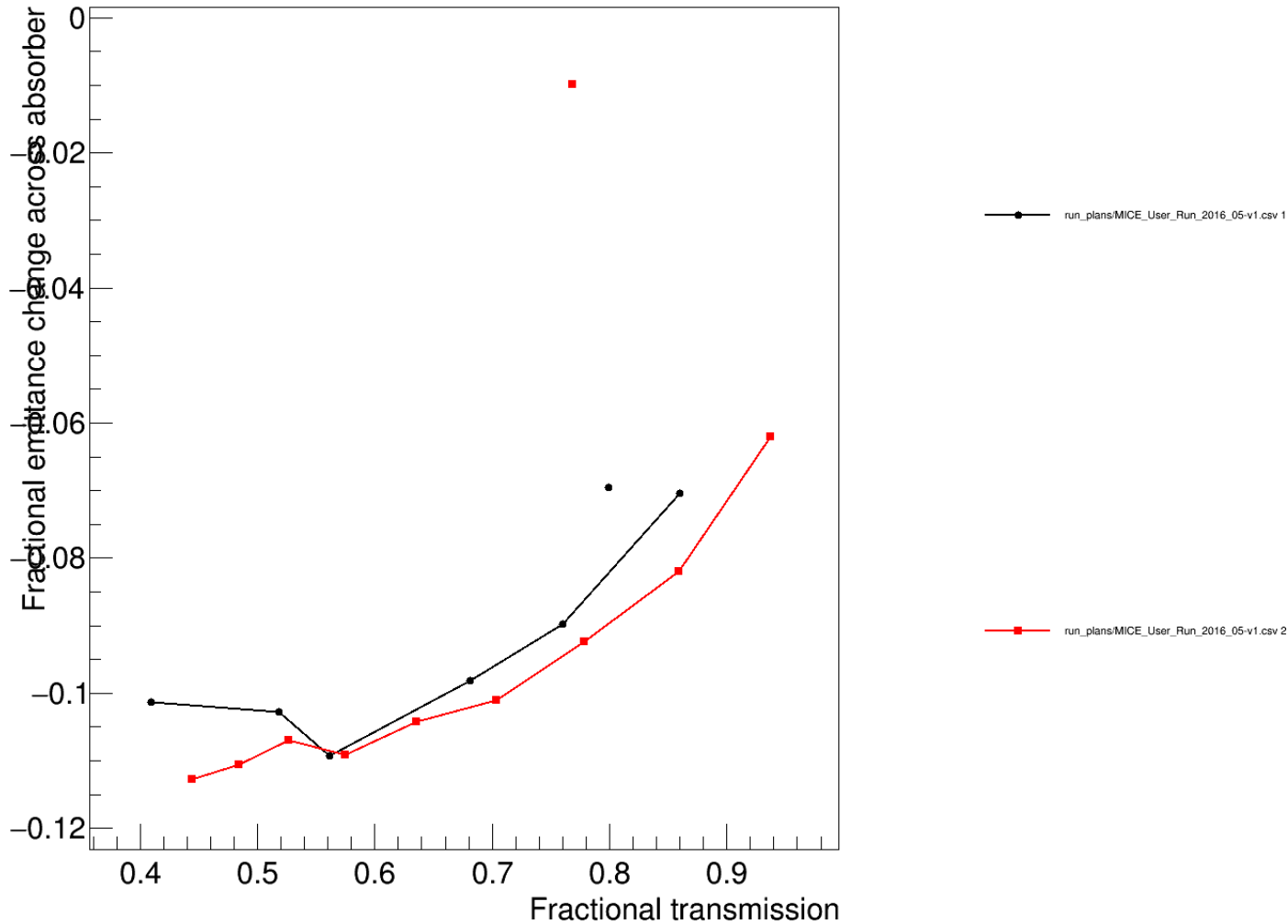


- Using Rogers simplified Step IV geometry
 - Track **50k** muon samples, with different initial conditions
 - Unmatched muon beam (Ao's beam files from October)
 - Matched beams with various emittances
- Plot resultant performance
 - Emittance reduction and transmission as a function of input emittance

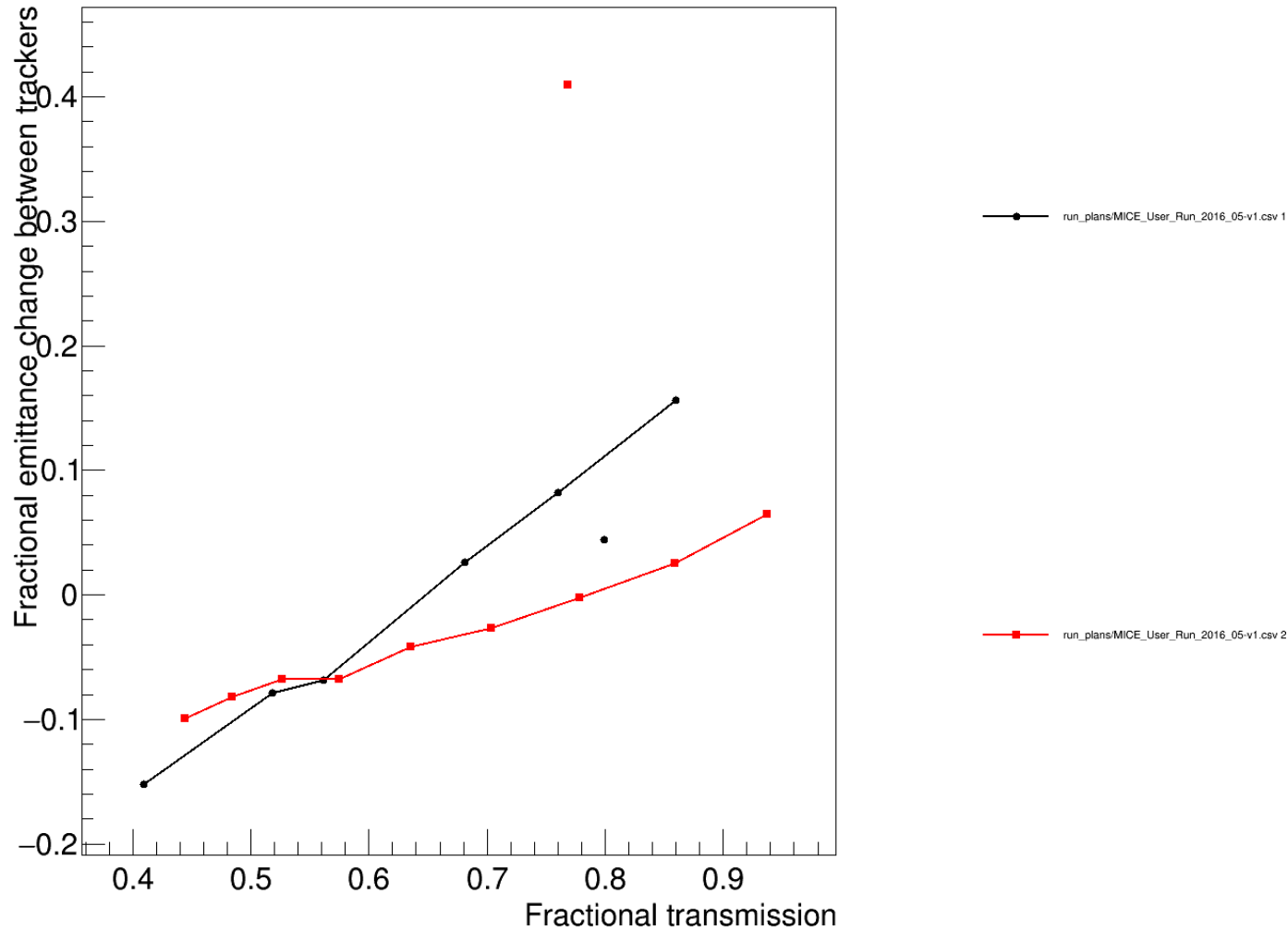


Performance plots – A_0 $p = 140$ Mev/c

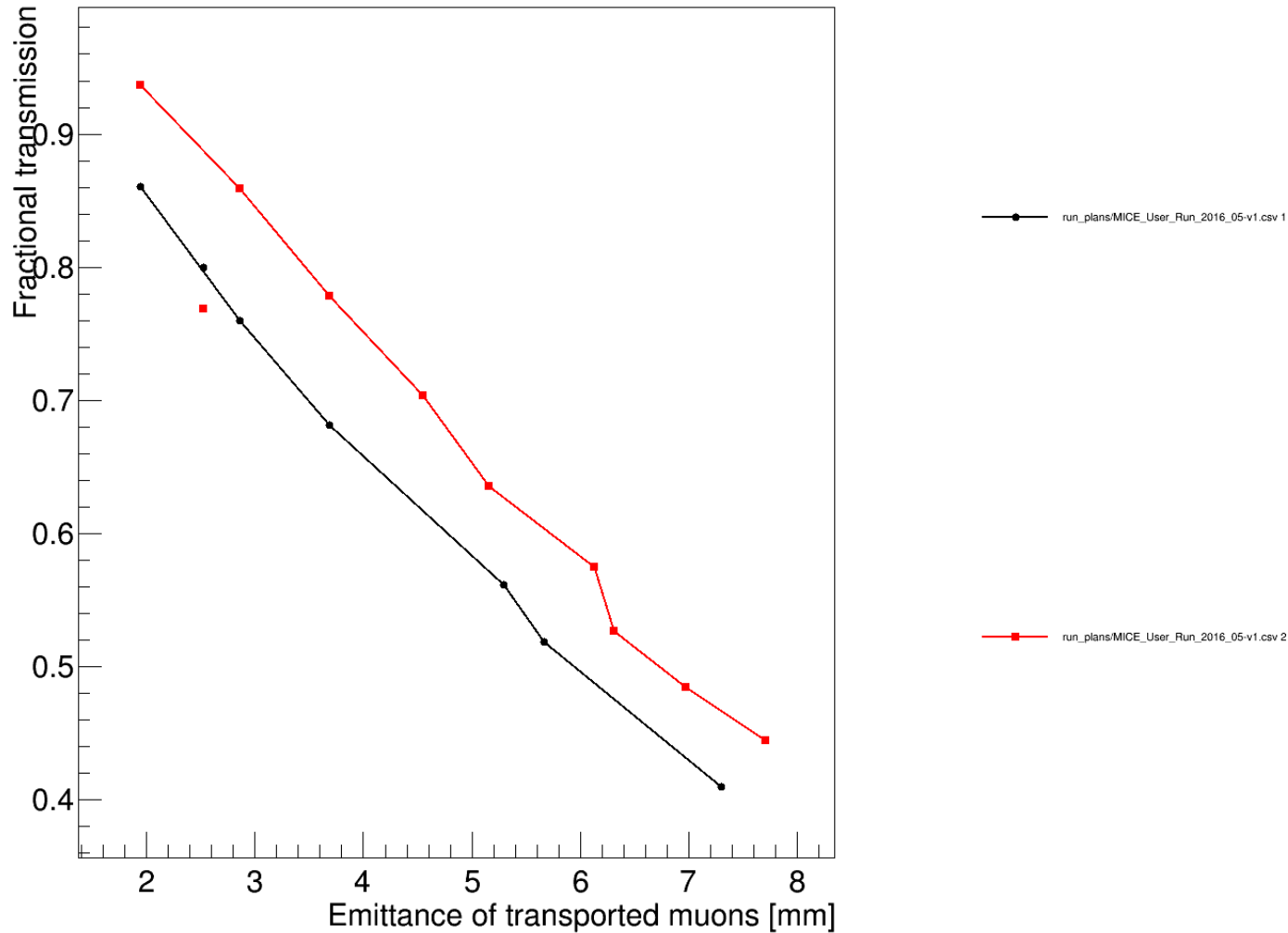
Performance plots - Ao 140

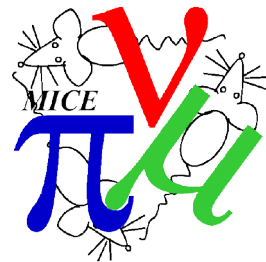


Performance plots - Ao 140



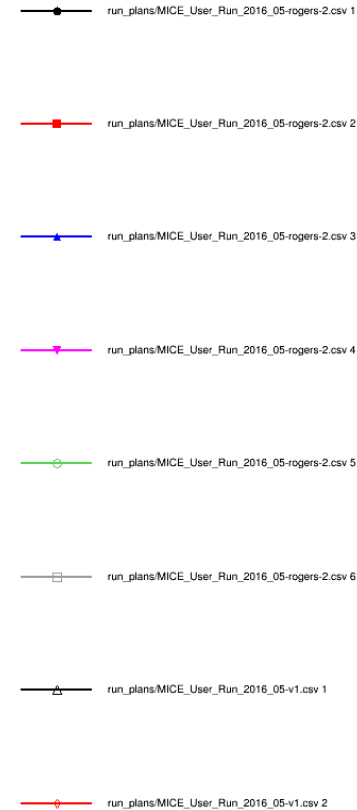
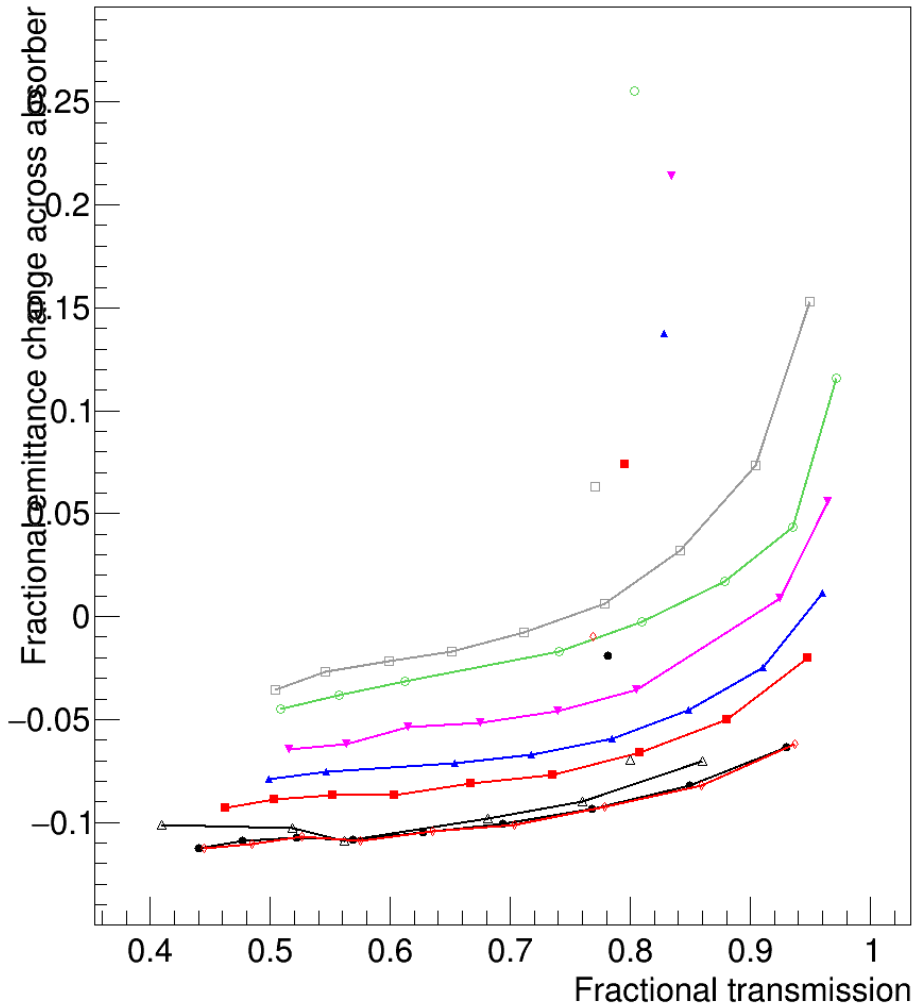
Performance plots - Ao 140



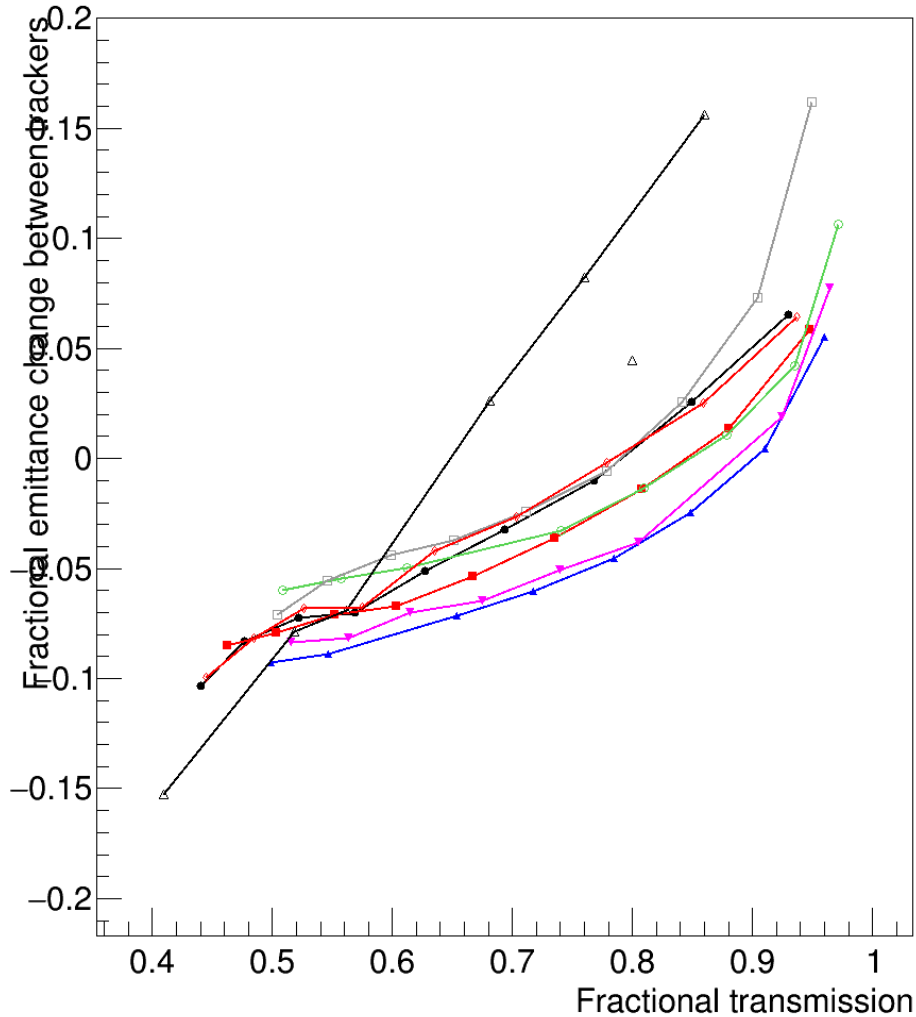


Performance plots – All $p = 140 \text{ Mev}/c$

Performance plots – All 140

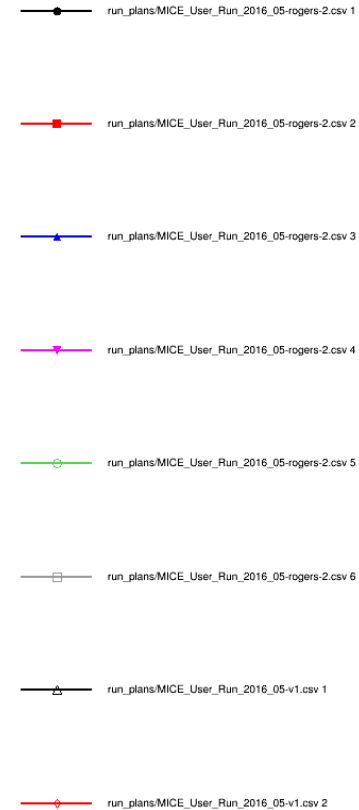
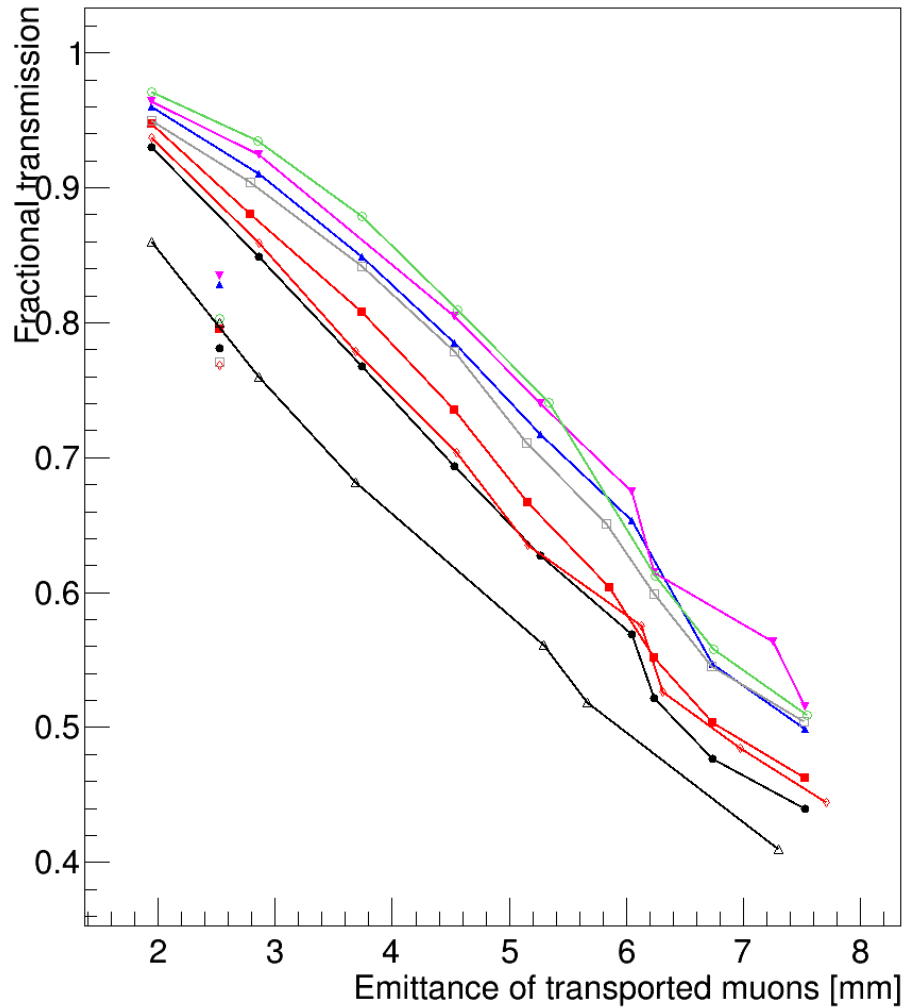


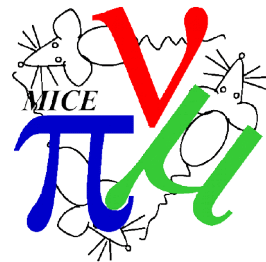
Performance plots – All 140



- run_plans/MICE_User_Run_2016_05-rogers-2.csv 1
- run_plans/MICE_User_Run_2016_05-rogers-2.csv 2
- run_plans/MICE_User_Run_2016_05-rogers-2.csv 3
- run_plans/MICE_User_Run_2016_05-rogers-2.csv 4
- run_plans/MICE_User_Run_2016_05-rogers-2.csv 5
- run_plans/MICE_User_Run_2016_05-rogers-2.csv 6
- run_plans/MICE_User_Run_2016_05-v1.csv 1
- run_plans/MICE_User_Run_2016_05-v1.csv 2

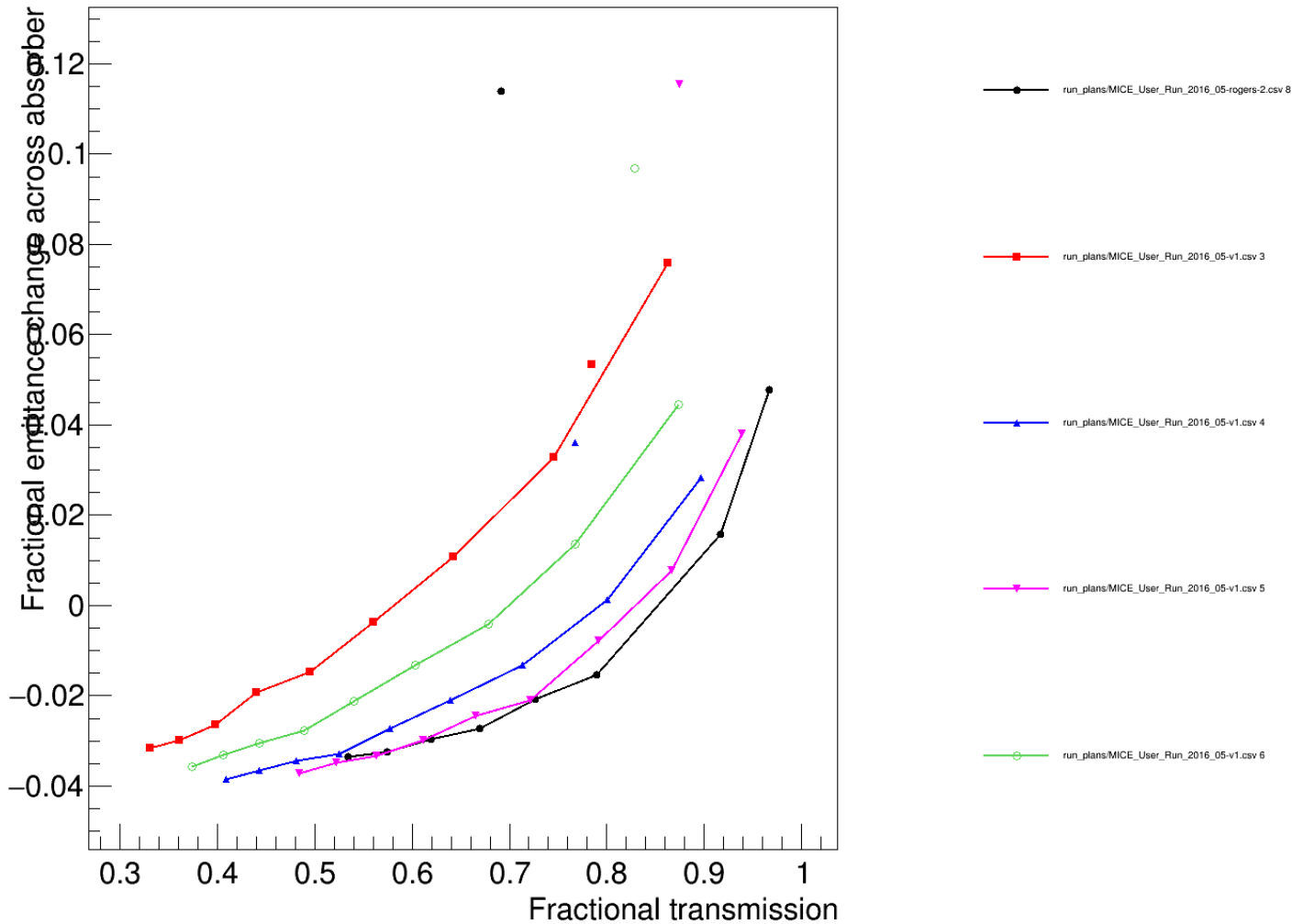
Performance plots – All 140



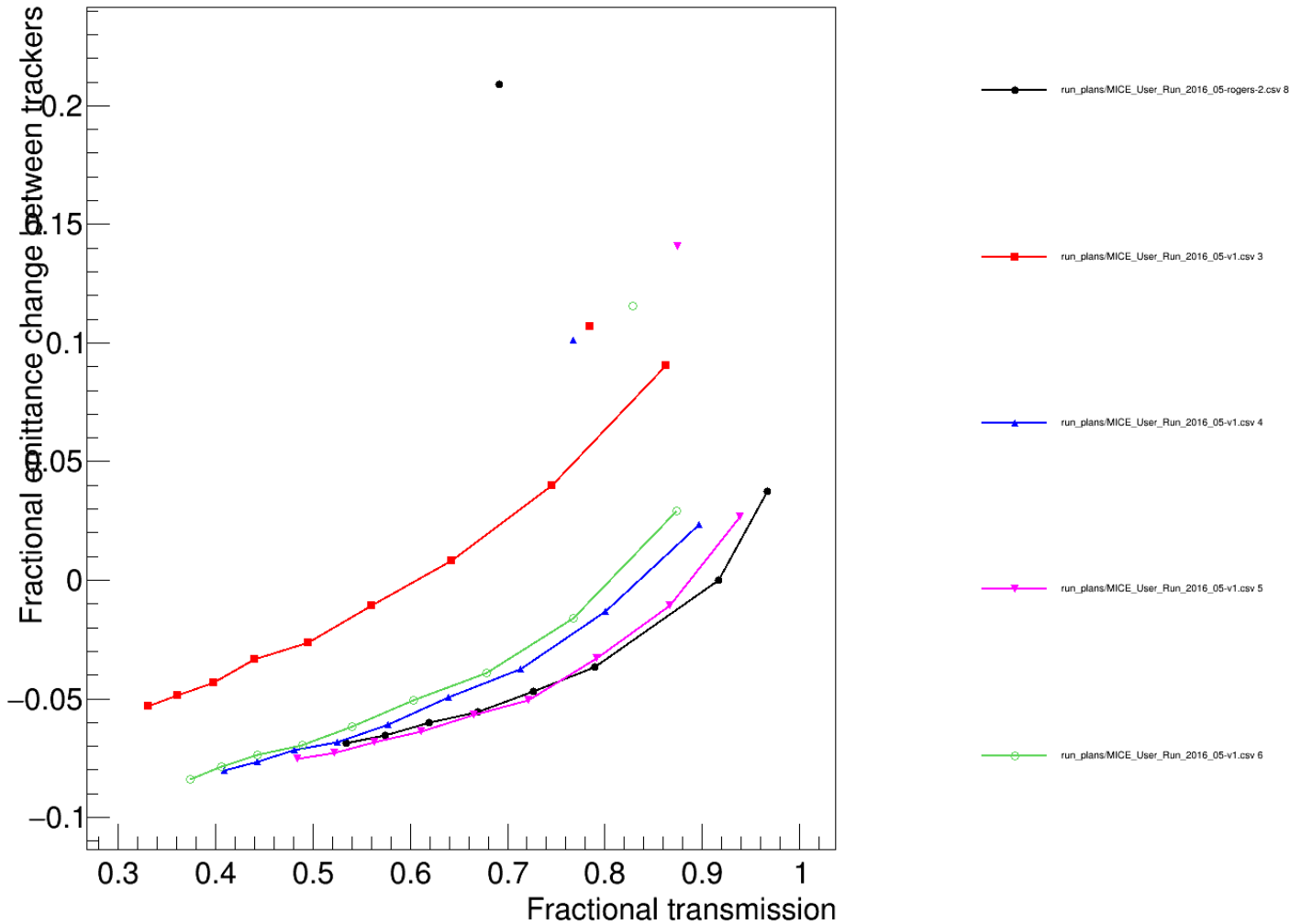


Performance plots – $p = 200 \text{ MeV}/c$

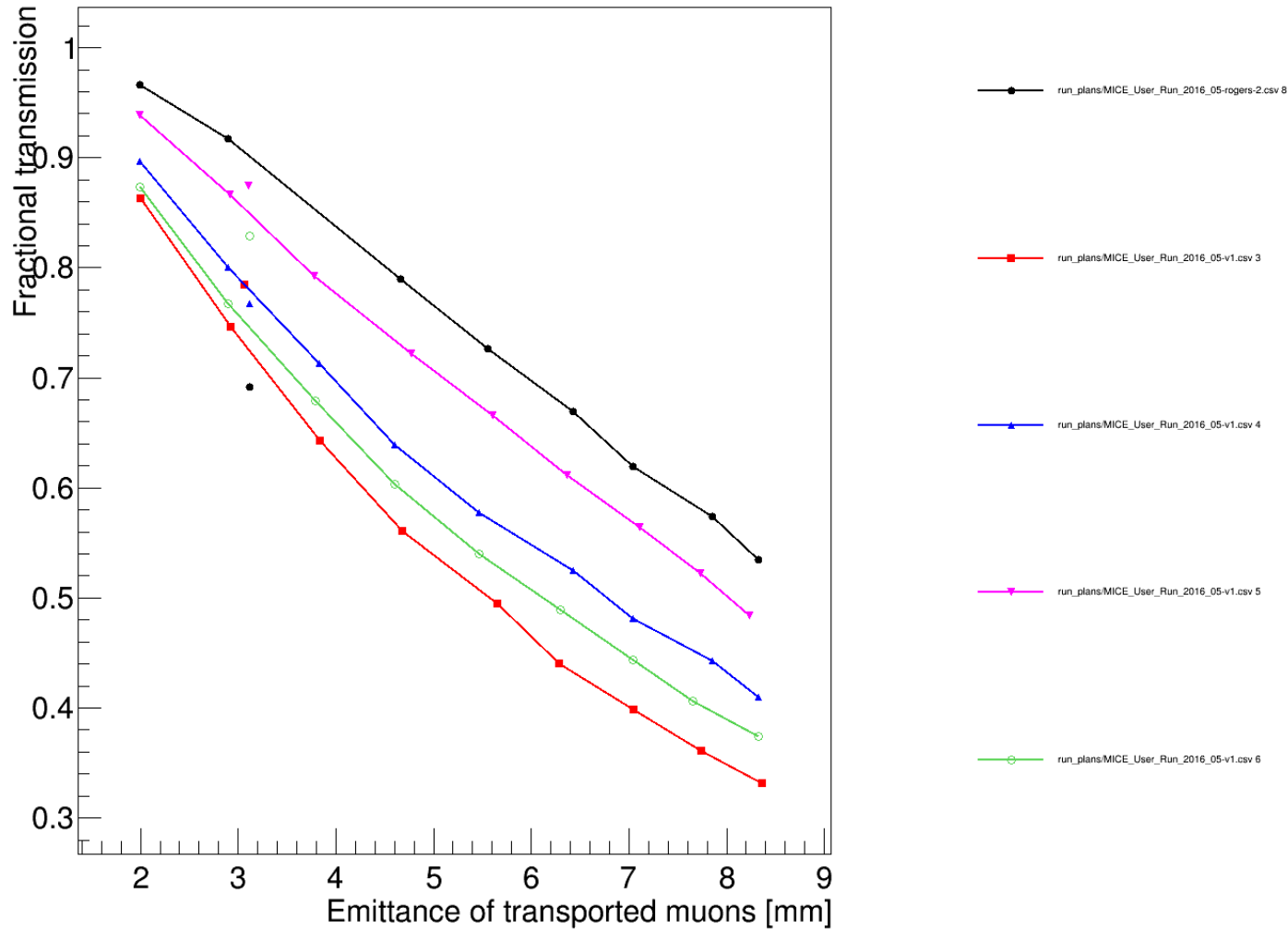
Performance plots - 200

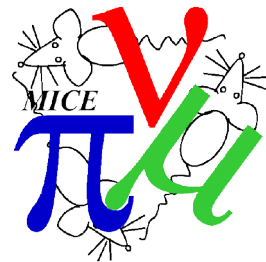


Performance plots - 200



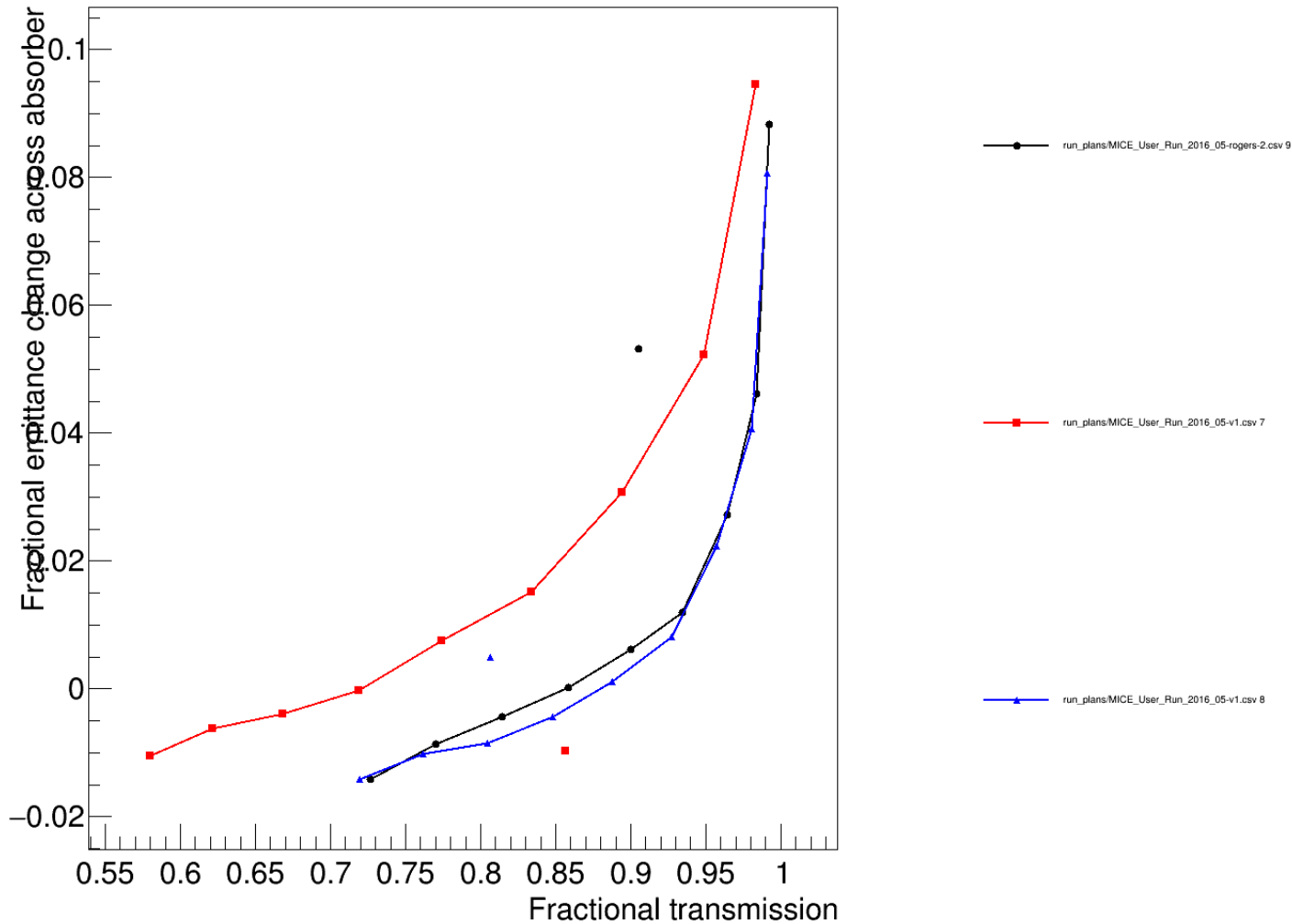
Performance plots - 200



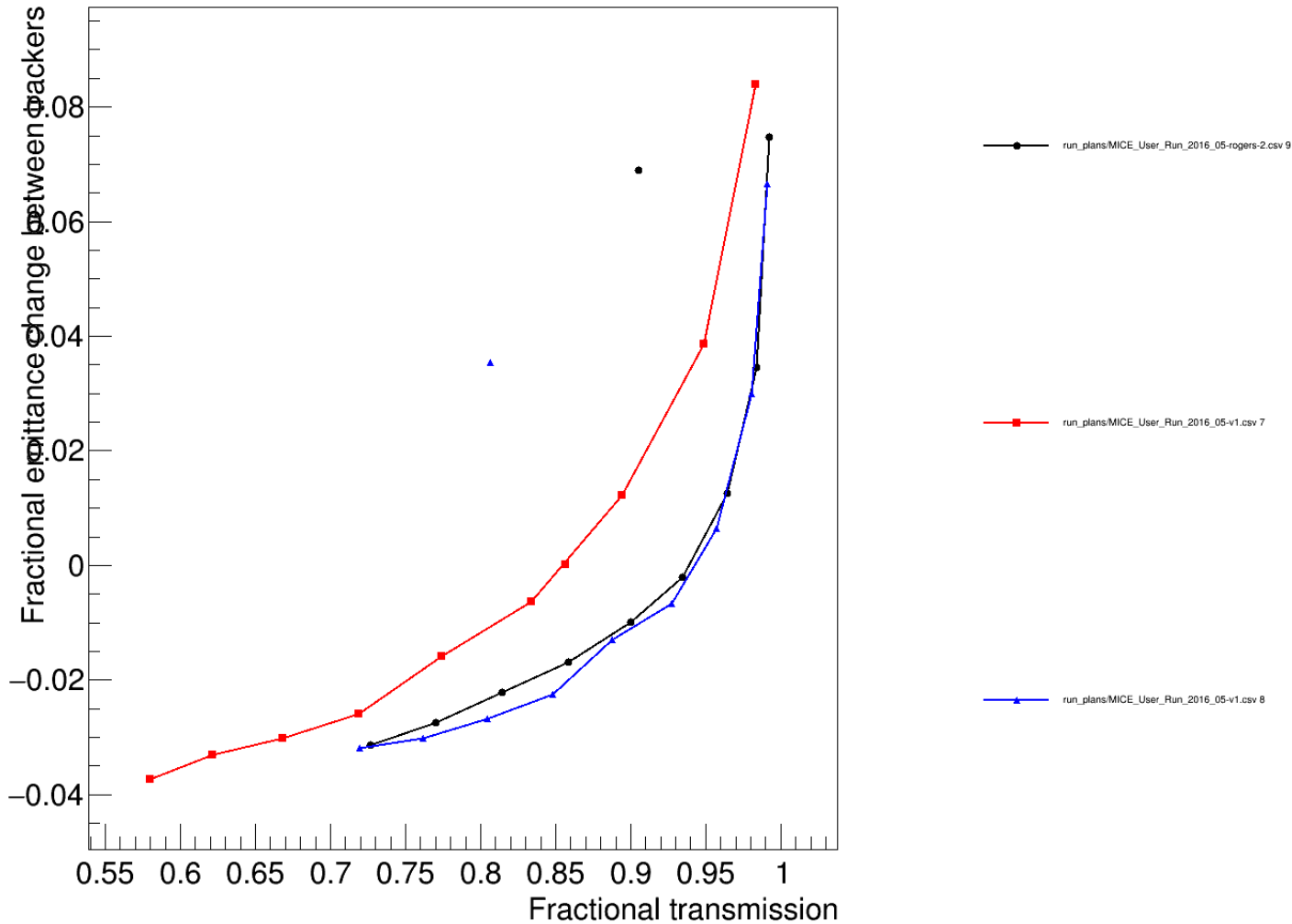


Performance plots – $p = 240 \text{ MeV}/c$

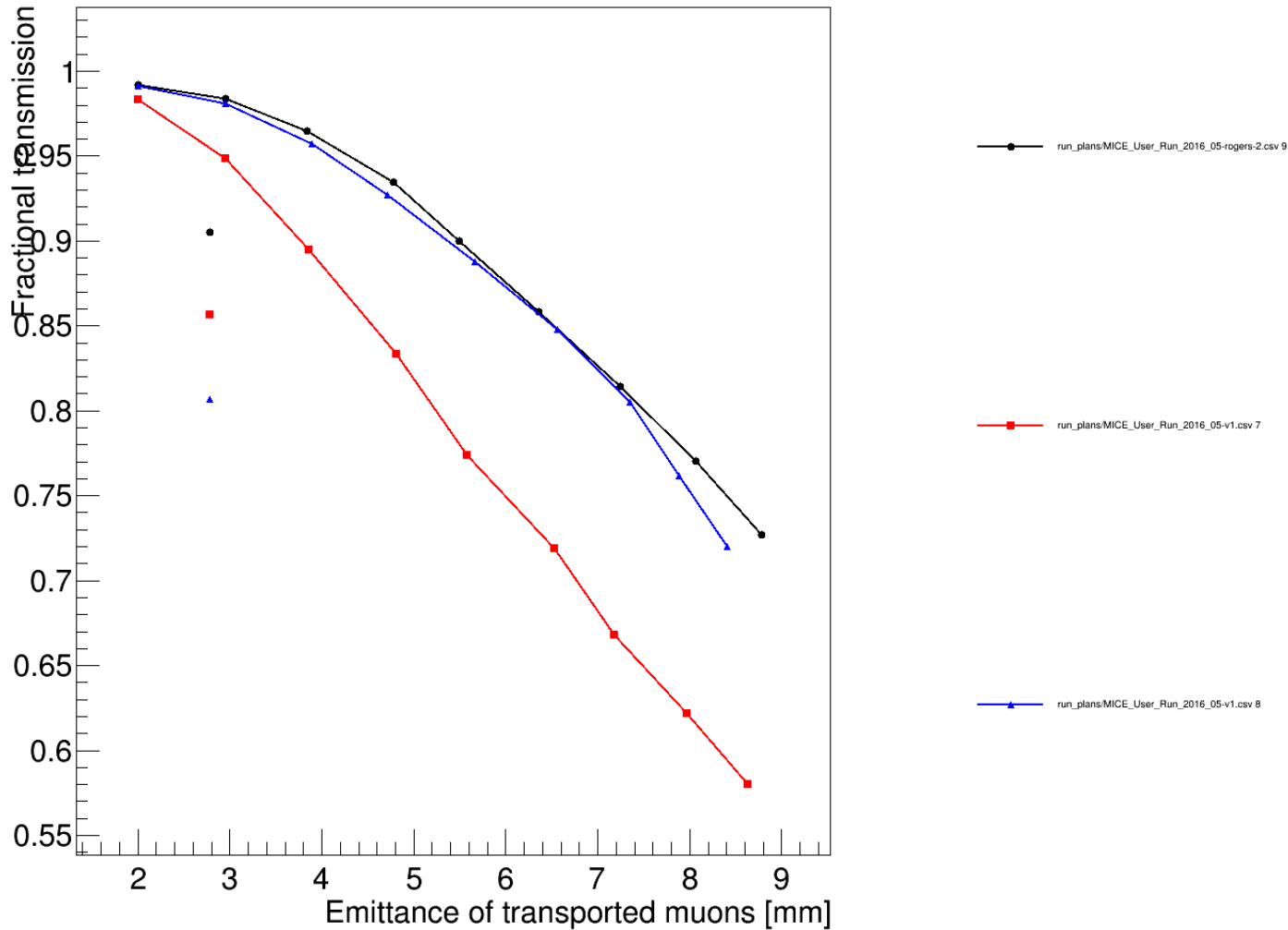
Performance plots - 240

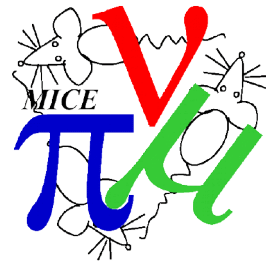


Performance plots - 240



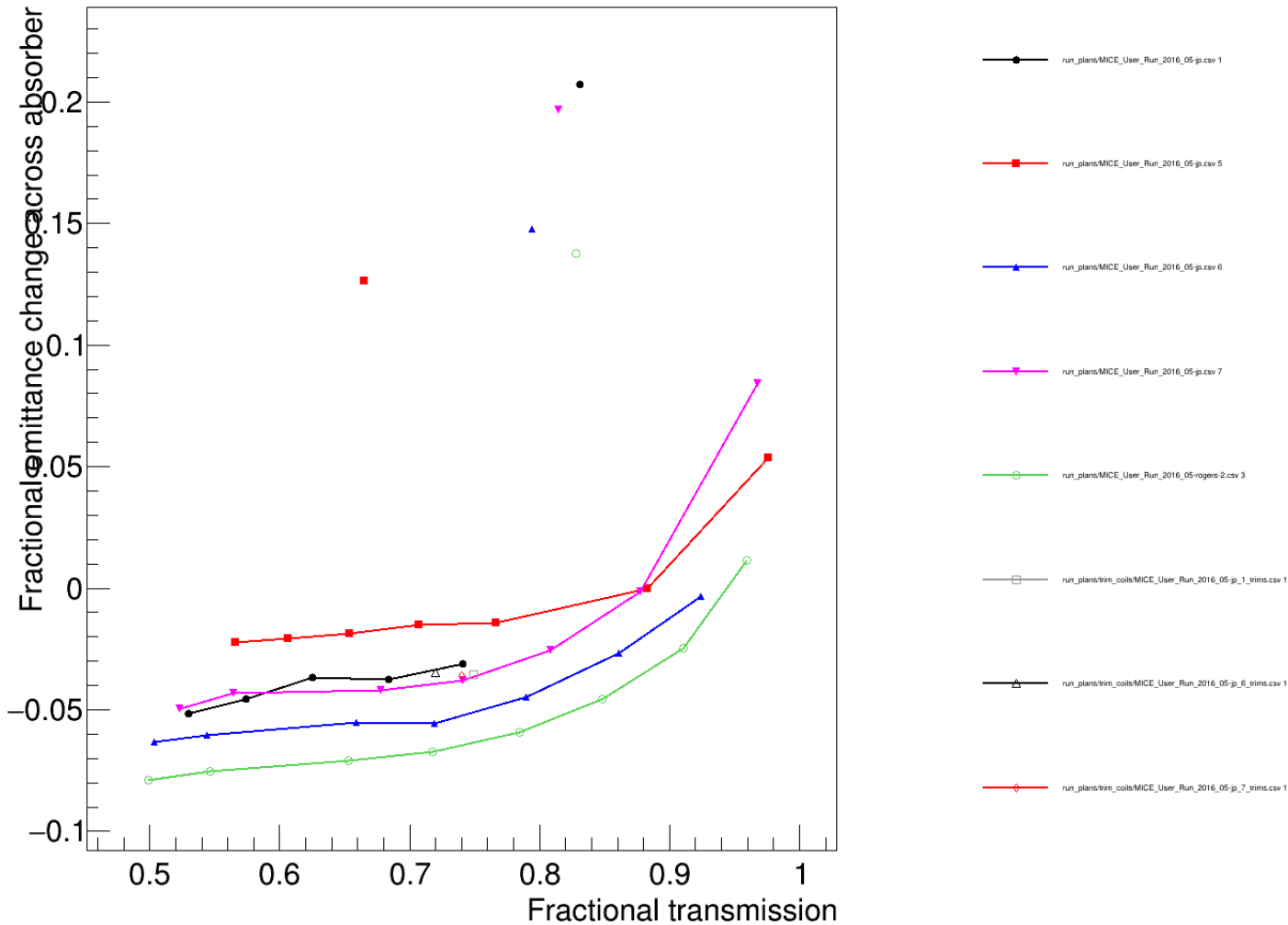
Performance plots - 240



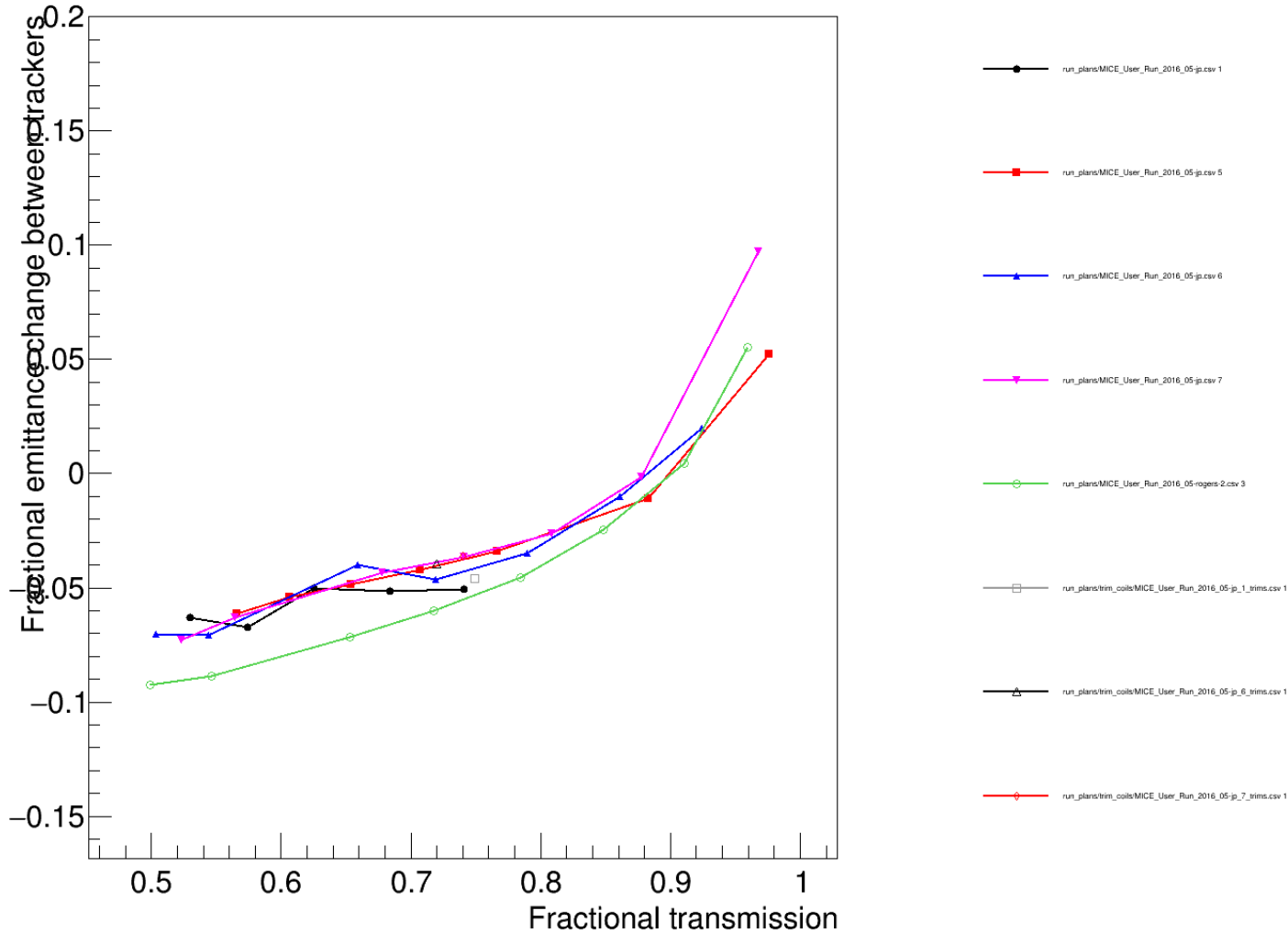


Performance plots – JP 140

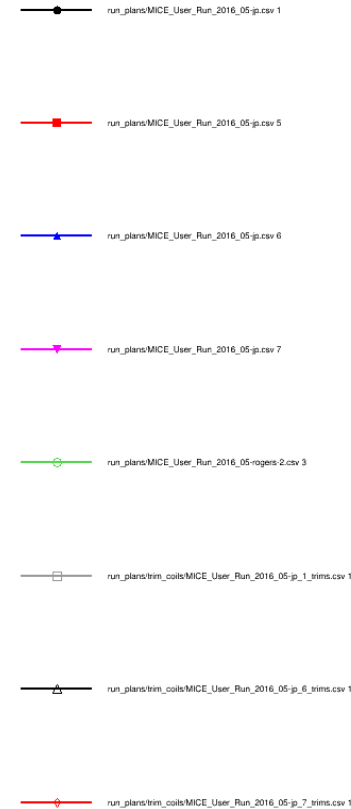
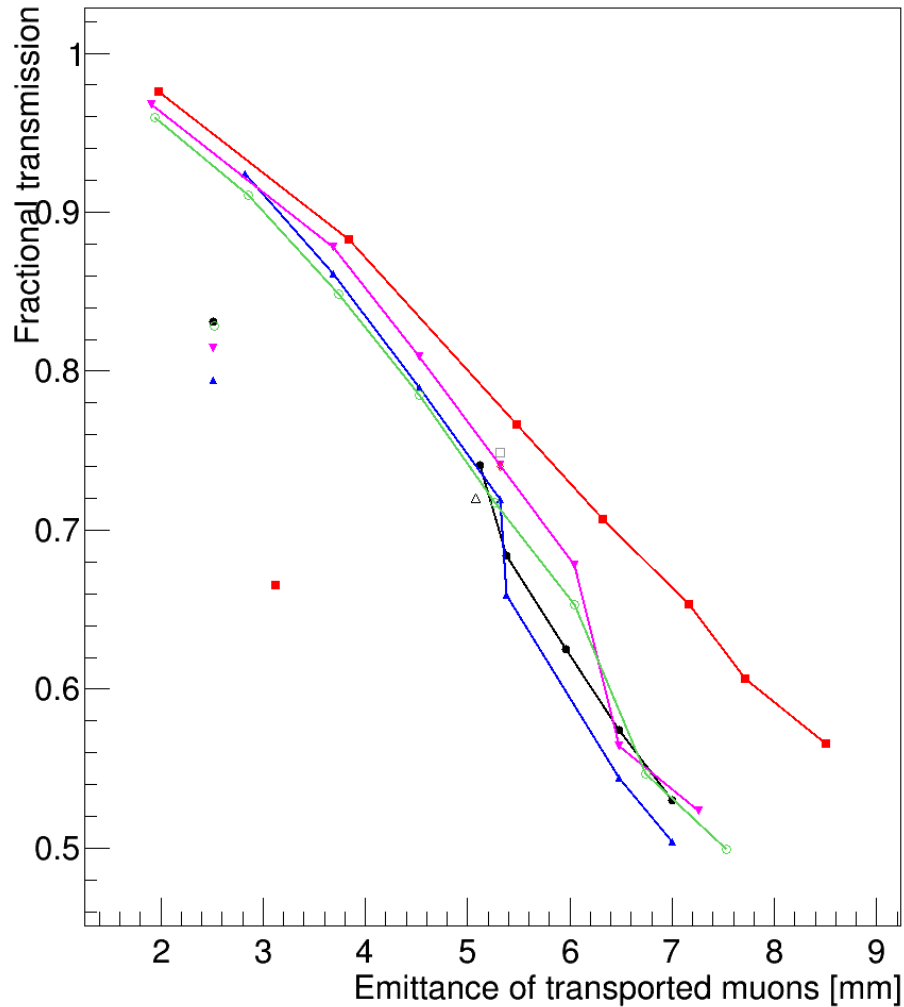
Performance plots – JP 140

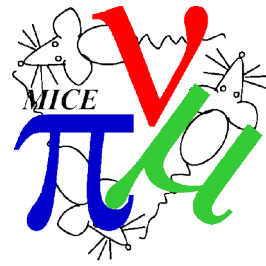


Performance plots – JP 140



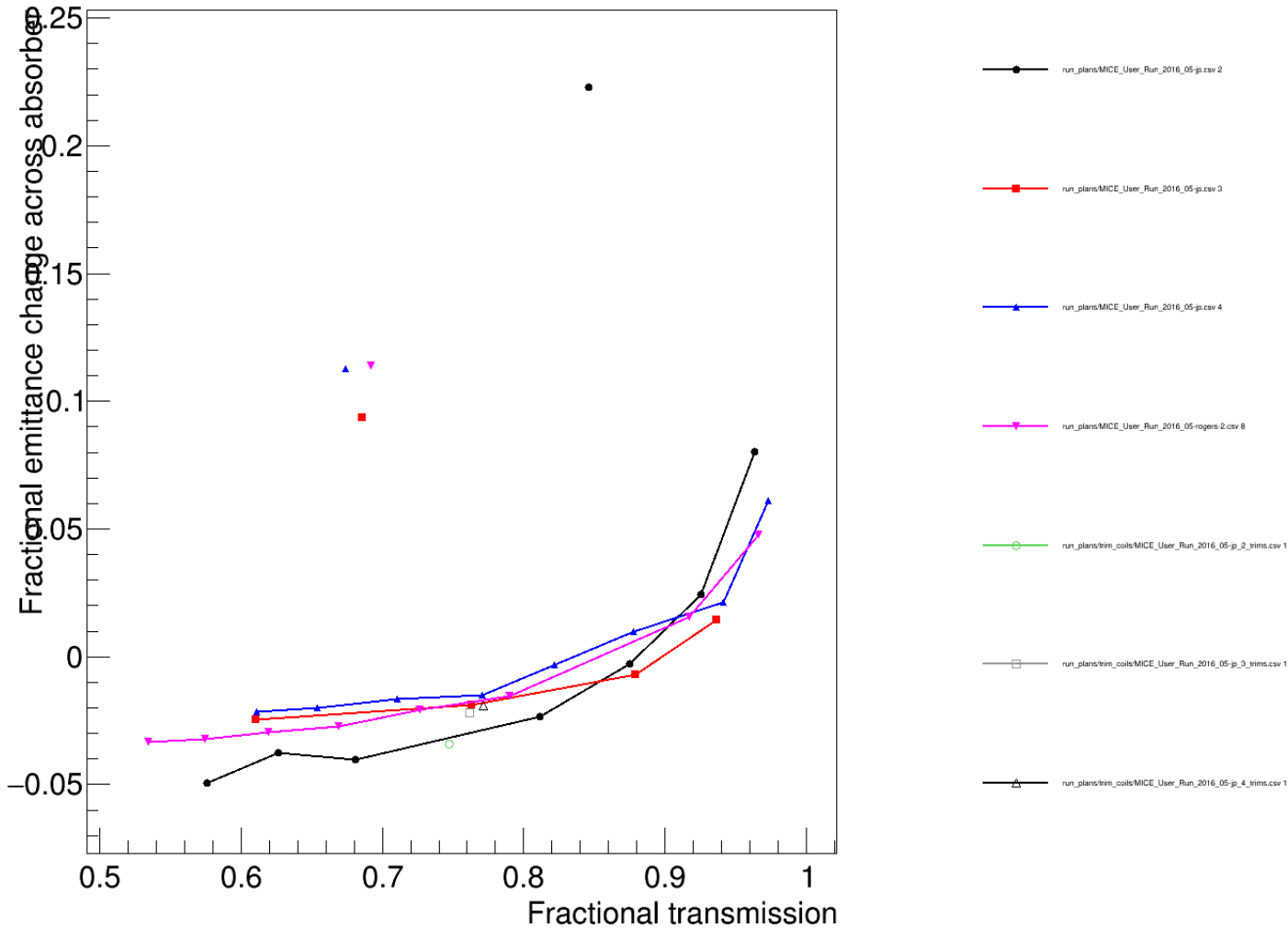
Performance plots – JP 140



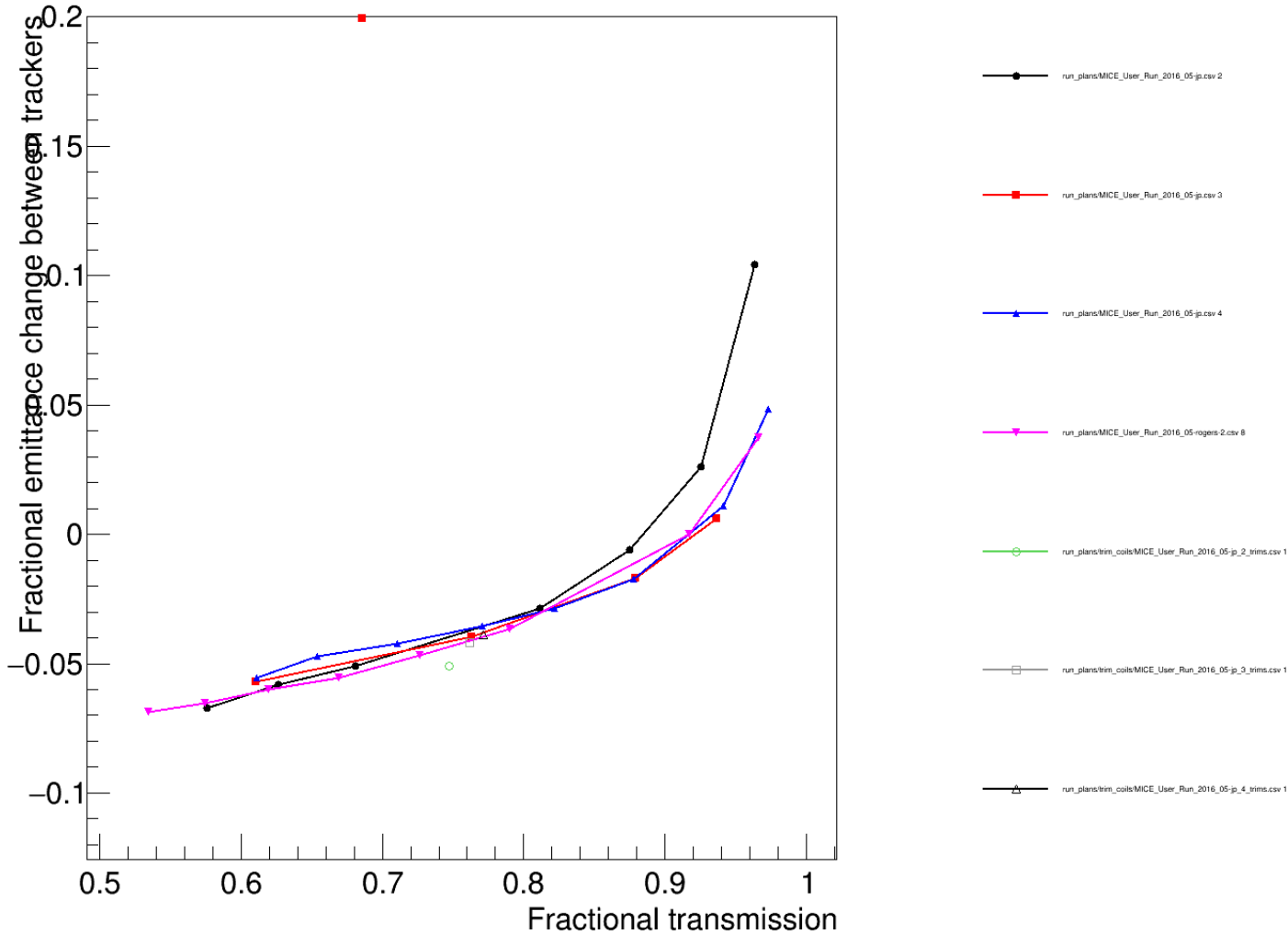


Performance plots – JP 200

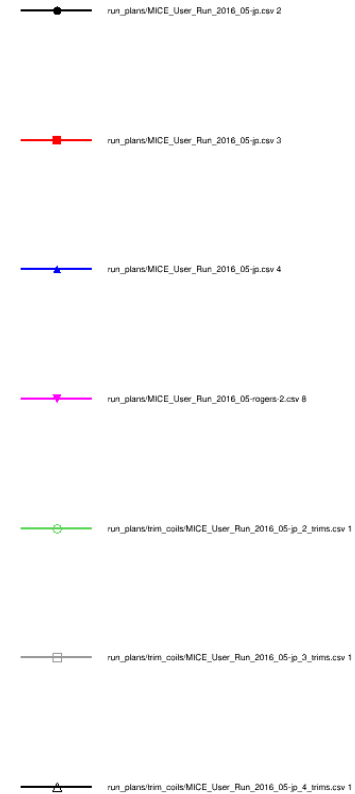
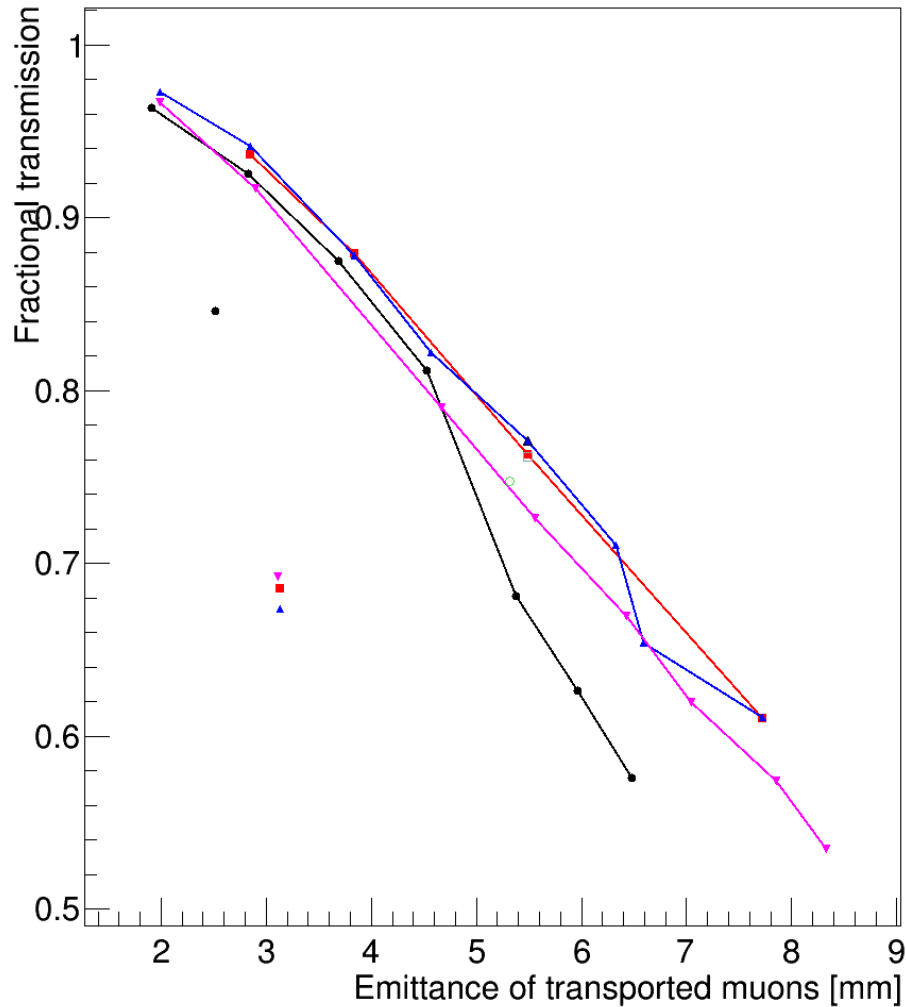
Performance plots – JP 200

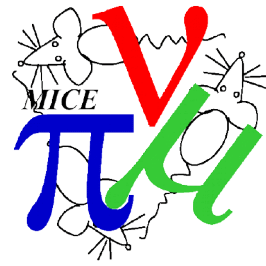


Performance plots – JP 200



Performance plots – JP 200



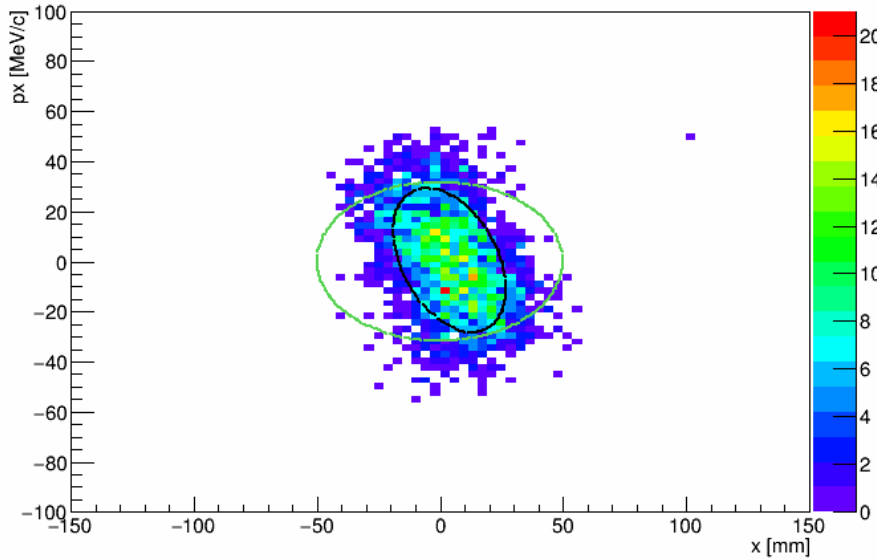


Quality of Match

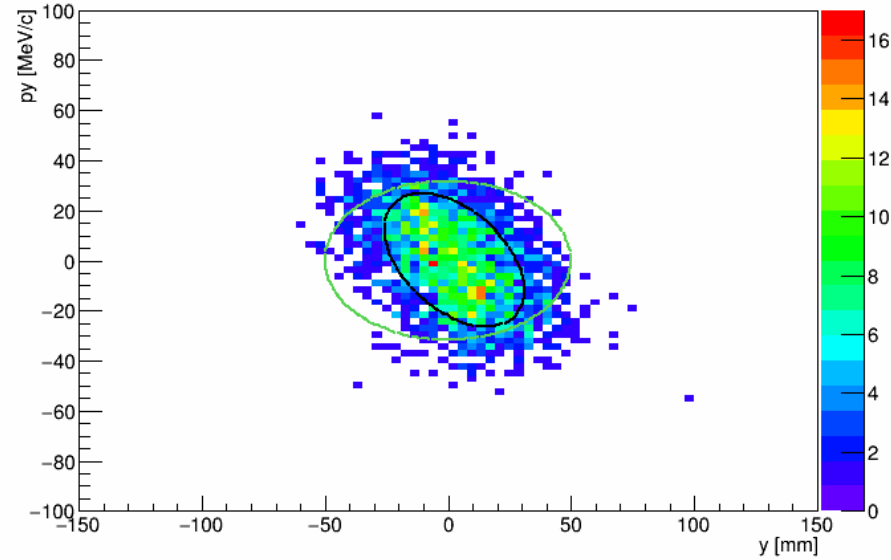
140 MeV/c no diffuser



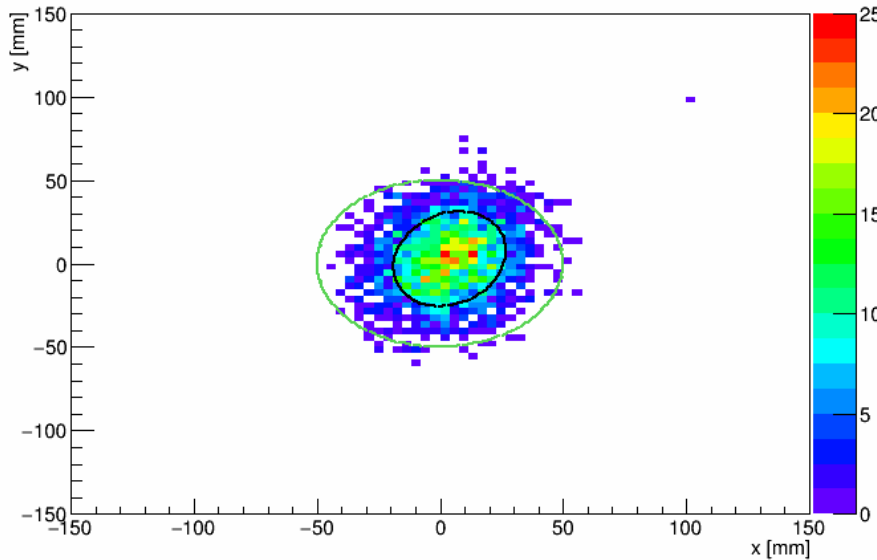
2016-04 1.2 140-3



2016-04 1.2 140-3



2016-04 1.2 140-3

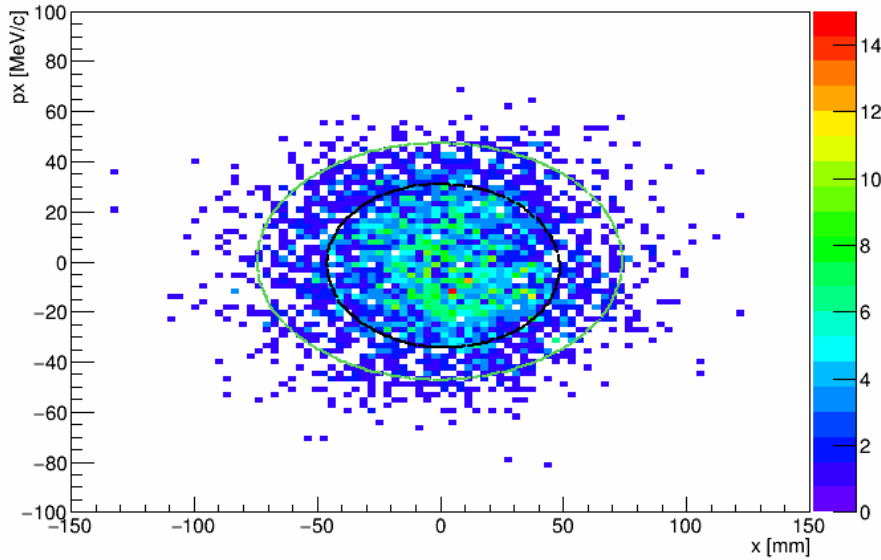


```
[[ 261.60277743 -132.48424394  56.89439101 -107.95424129]
 [-132.48424394  414.6939582   174.82522808 -21.40432156]
 [ 56.89439101  174.82522808  402.17357014 -173.47897002]
 [-107.95424129 -21.40432156 -173.47897002  354.37343724]]
```

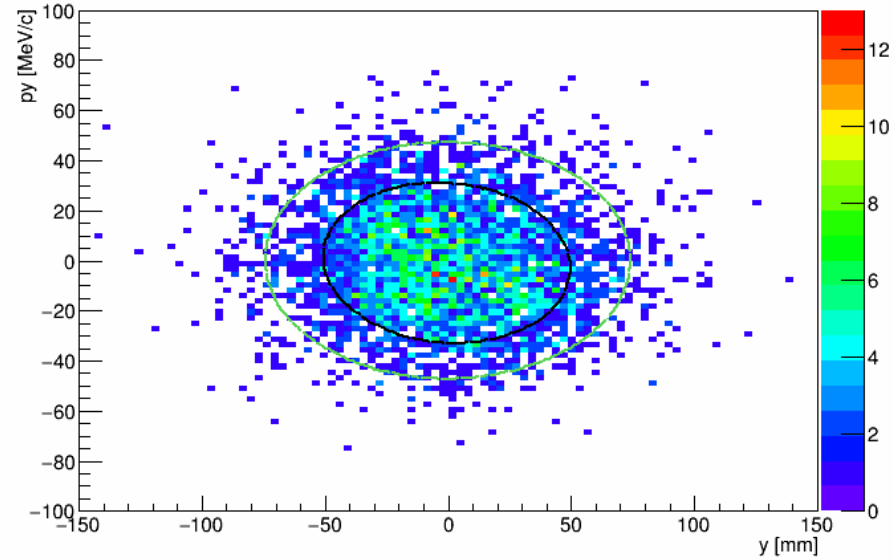
140 MeV/c intermediate diffuser



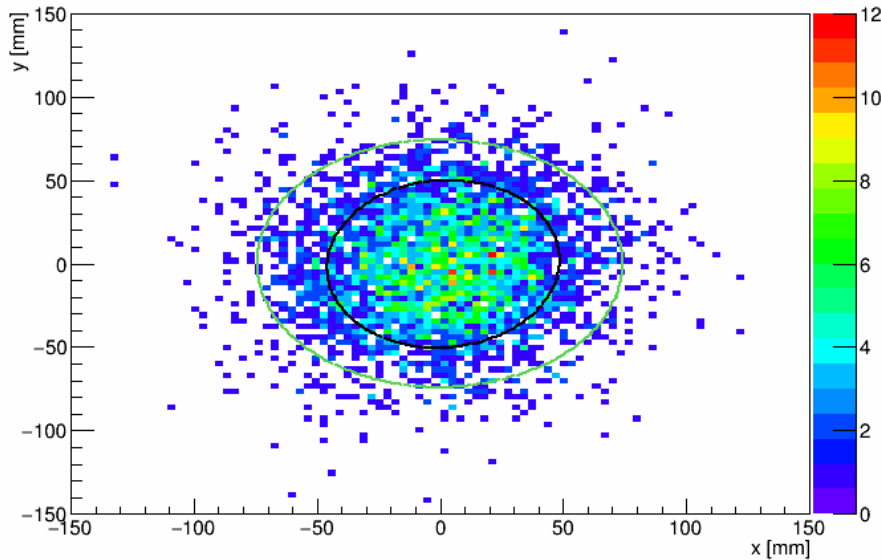
2016-04 1.2 140-6



2016-04 1.2 140-6

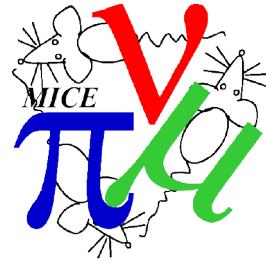


2016-04 1.2 140-6



```
[[ 267.43314935 -123.04388467  66.79853792 -117.12014716]
 [-123.04388467  415.63876991  164.3266348  -24.29723829]
 [ 66.79853792  164.3266348  393.39305931 -178.3398743 ]
 [-117.12014716 -24.29723829 -178.3398743  369.76631725]]
```

140 MeV/c thickest diffuser



```
[[ 2499.89227843  75.33710838  103.78340634 -775.40007318]
 [ 75.33710838  732.50662005  460.96905374 -45.09144888]
 [ 103.78340634  460.96905374  1838.99405674  135.50563295]
 [-775.40007318 -45.09144888  135.50563295  656.18446787]]
```