Carbon Target Parameters

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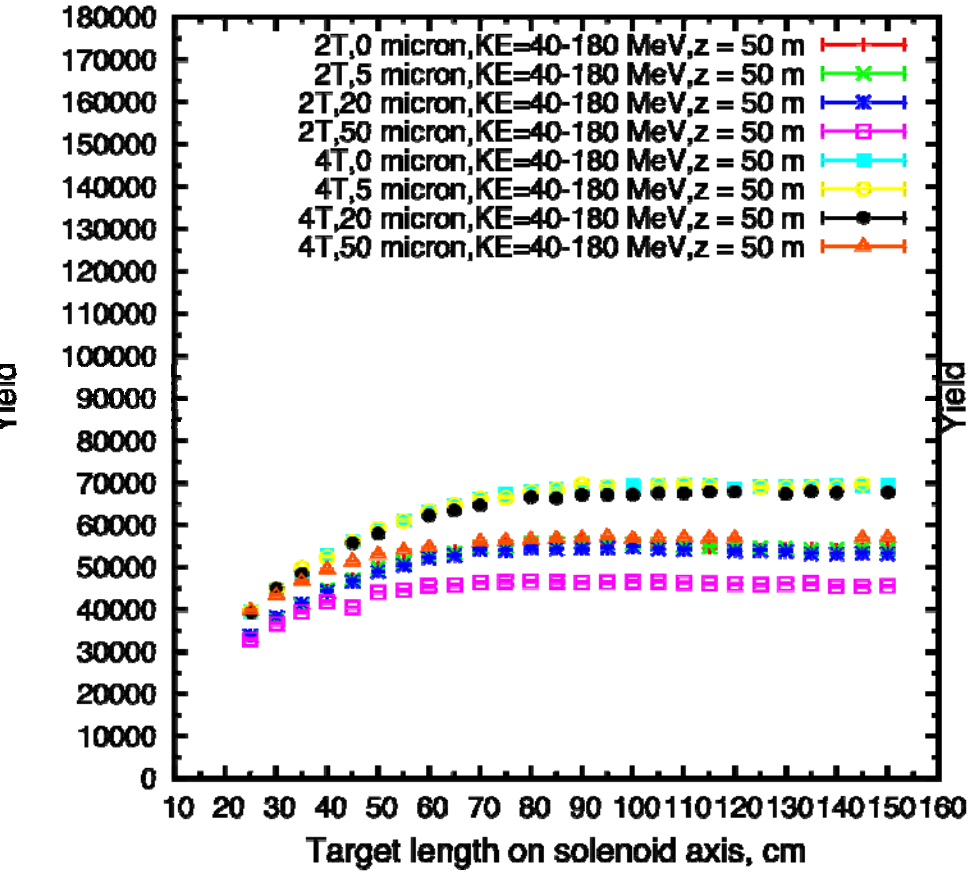
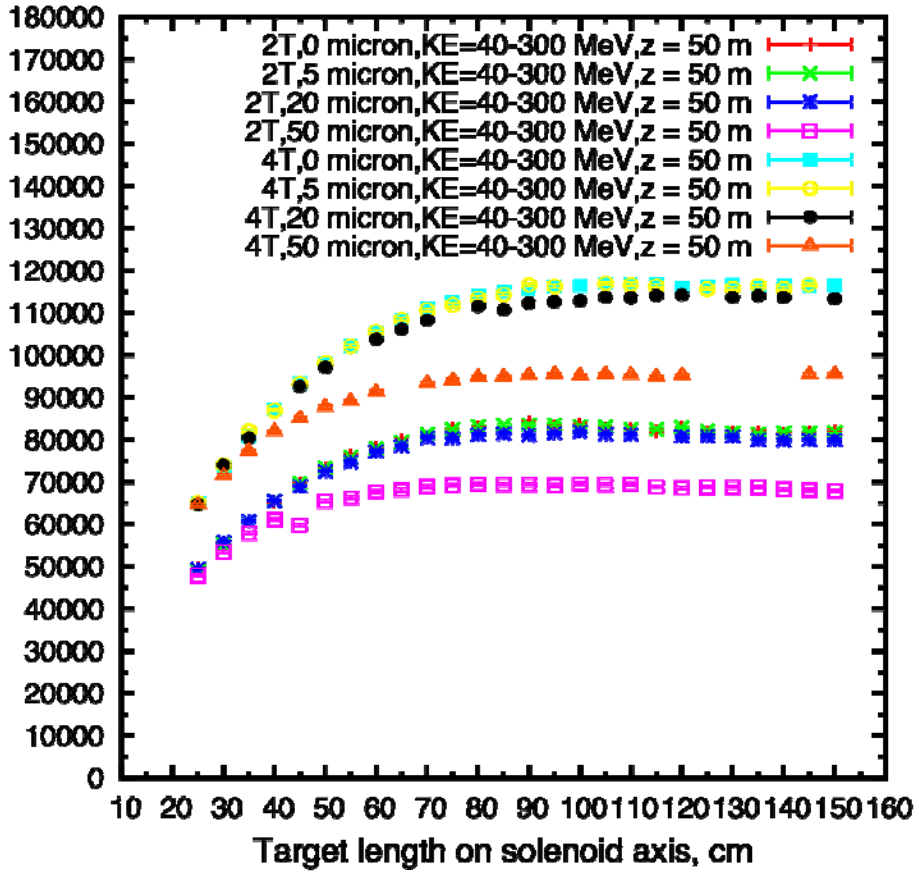
Introduction

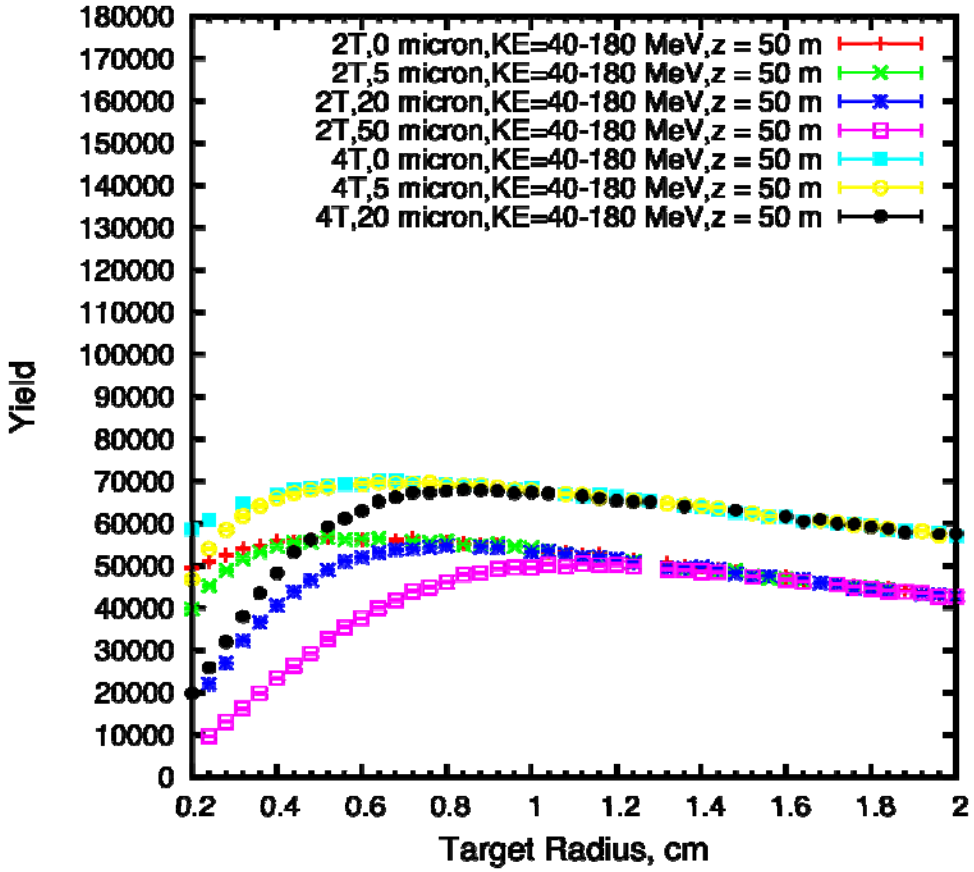
- MARS15 (BNL Spot Cluster)
- ROOT based geometry setting without BE windows for 20t02T5m and 20to 4T5m configuration (Carbon target, 1.8 g/cm^3)
- No SMIN card and 400,000 events
- Beam emittance: 0, 5, 20, 50 micron
- KE at 6.75 GeV, launched at z = -100 cm
- Collect all particles at z = 50 m with KE selection of min. of 40 MeV and max. of 180 MeV or 300 MeV

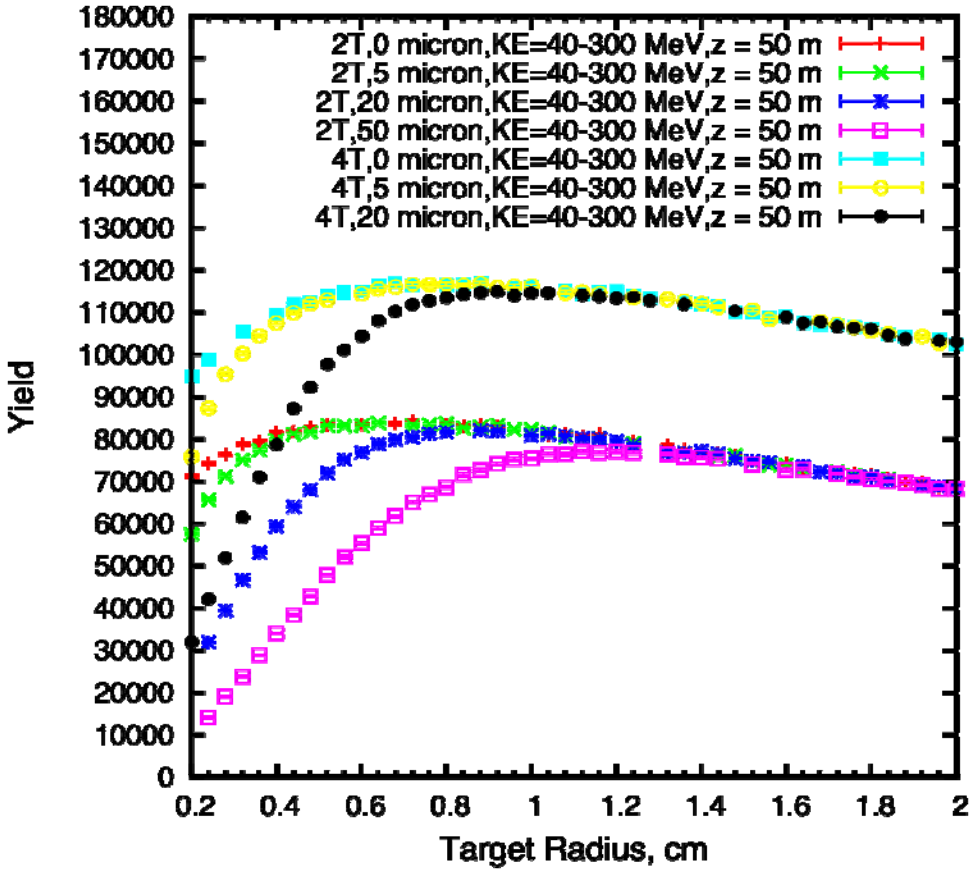
Vary Target Length



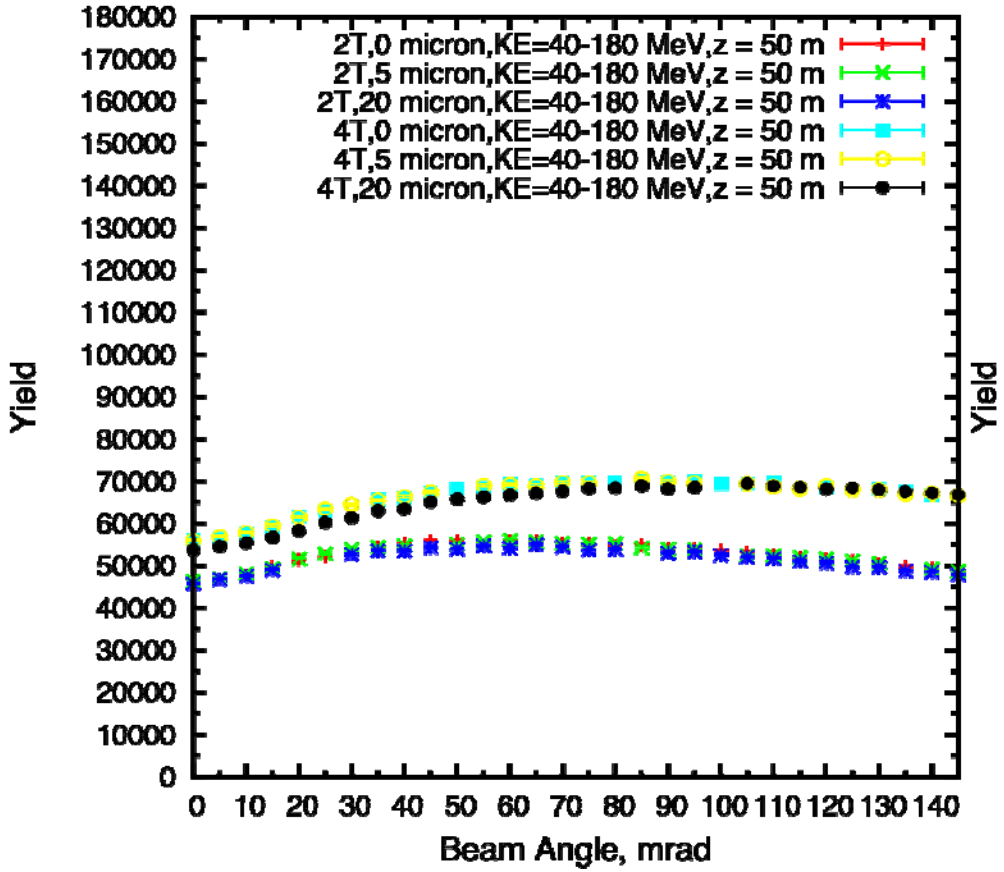


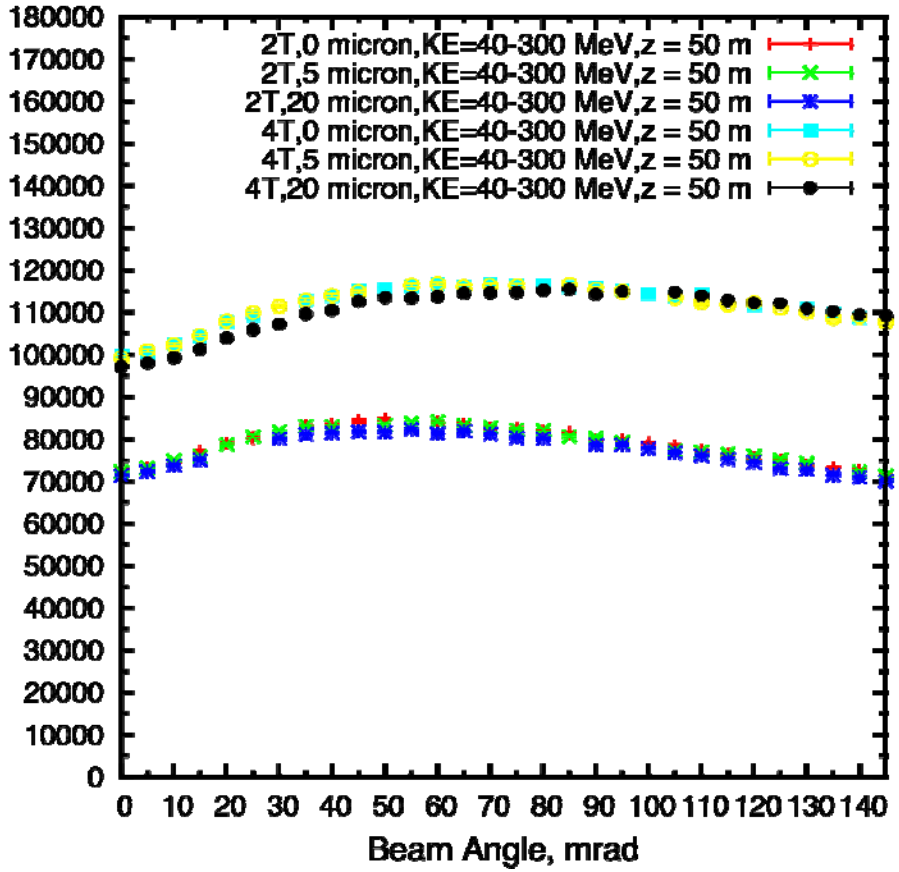
Vary Target Radius





Vary Target Rod Angle





Optimized Carbon Target Parameters

Beam emittance μm	Target length cm	Target radius cm	Tilt angle mrad
0	100	0.8	65
5	100	0.8	65
20	100	1.0	65
50	100	1.2	65

Particle Distributions for Front End Study

Beam emittance μm	Target length cm	Target radius cm	Tilt angle mrad
0	100	0.8	65
20	100	1.0	65

Target radius/beam radius = 4
Same tilt angle of beam and target to SC axis
Particle distributions generated at collection planes of 2 (fort.81), 5 (fort.82), and 10 m (fort.83)

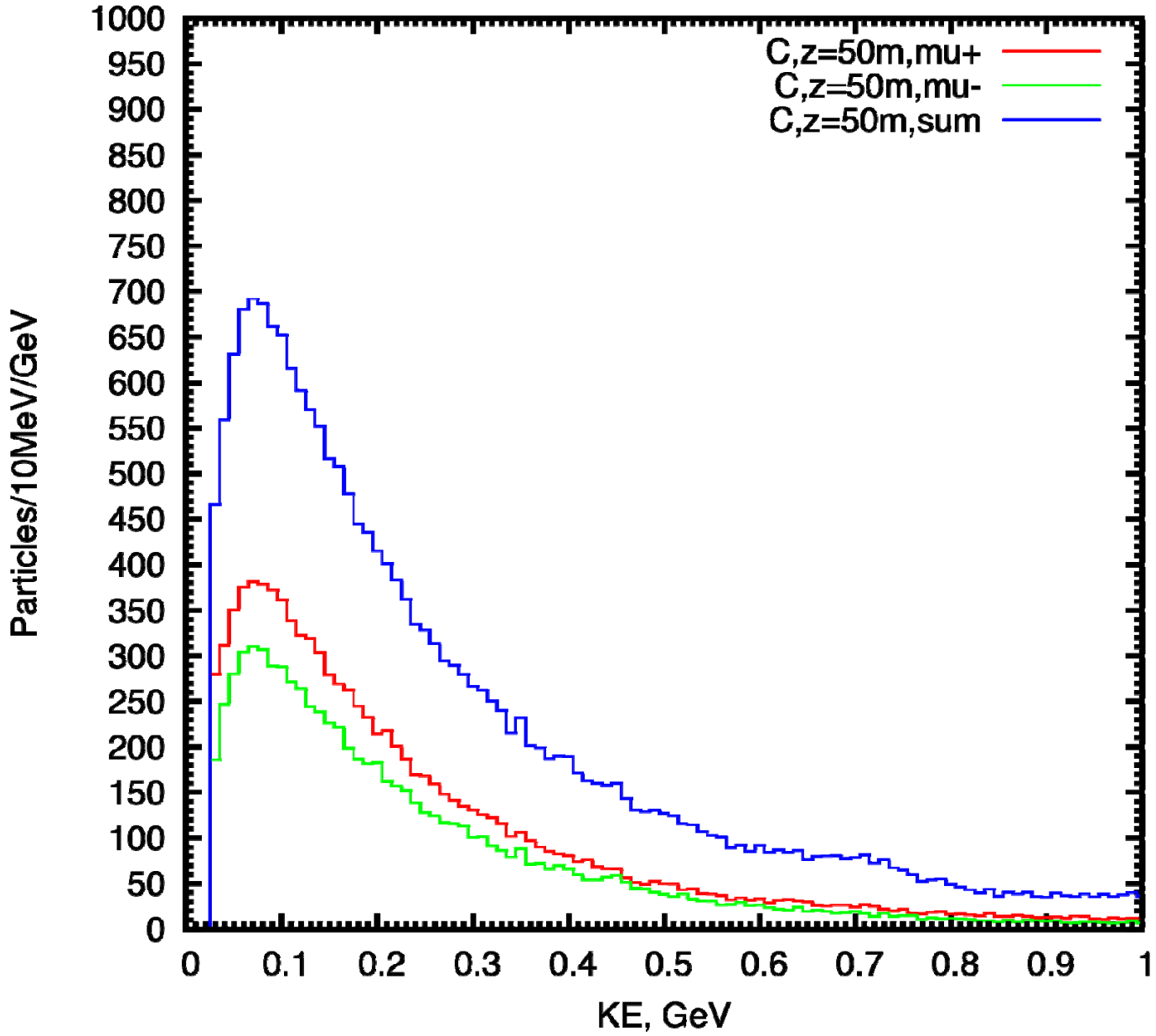
/home0/xding/mars15-2015/20to2T5m4PDL-ROOT-Geom/G6.75-C-opt/front-study

/home0/xding/mars15-2015/20to4T5m4PDL-ROOT-Geom/G6.75-C-opt/front-study

Backup

20to2T5m Configuration

(LEN=100 cm, TR=0.8 cm, BR=0.2 cm, BA=65 mrad, CA=0)



20to4T5m Configuration

(LEN=100 cm, TR=0.8 cm, BR=0.2 cm, BA=65 mrad, CA=0)