Acceptance with reduced Calo: preliminary study.

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Acceptance definition

◆ Base code: geometry and acceptance cut inside HerdSoftware.

◆ A particle is in acceptance if:

  ● The track entrance point is on a Calo surface, excluding the bottom surface.

  ● The track length in the Calo is > of a given threshold (X0).

◆ The Earth and CSS could stops particle arriving below the horizon:

  ● Conservative selection rejects particle with polar angle A > 90 deg.

◆ STK, SCD; PSD and FIT are not taken into account.

Scaling the Calo dimensions

◆ Modified version of HS acceptance code which takes into account the <u>Calo envelop</u>.

◆ Each 1D dimension (X, Y, Z) is scaled: Lx' = Cx*Lx; Ly' = Cy*Ly; Lz' = Cz*Lz.

◆ Assuming that the volume reduction is: Cv = Cx*Cy*Cz; V' = Cv*V

◆ First test: using the same scaling factor for each axis: Cx=Cy=Cz.
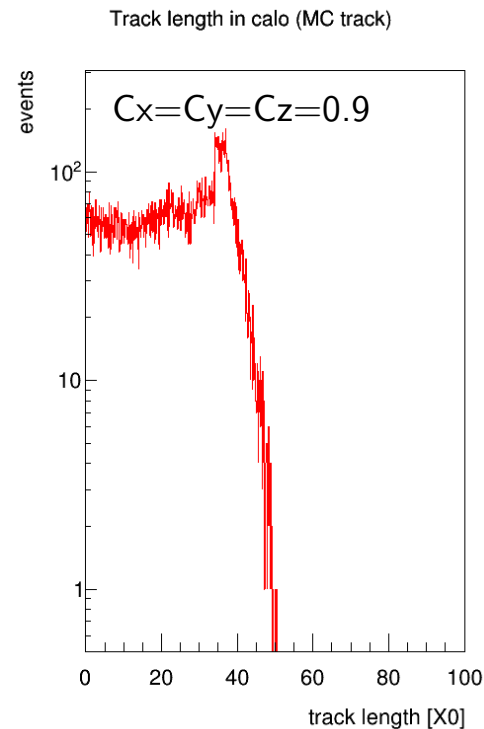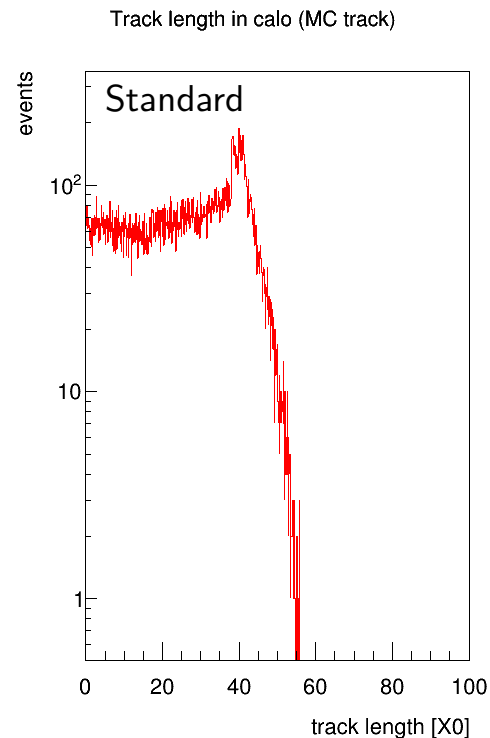
Removing 1/21 cube is ~ config. 2
Scaling ¾ is = config. 4.
Removing 2/21 cubes is ~ config. 5

Config. ID	Cx	Cy	Cz	Cv
0	1	1	1	1
1	0.975	0.975	0.975	0.927
2	0.95	0.95	0.95	0.857
3	0.925	0.925	0.925	0.791
4	0.909	0.909	0.909	0.75 (¾V)
5	0.9	0.9	0.9	0.729

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◆ Few plots to check the scaling.

Entrance point on calo (MC track)

Standard

Entrance point on calo (MC track)

Cx=Cy=Cz=0.9

Track length in calo (MC track)

Standard

Track length in calo (MC track)

Cx=Cy=Cz=0.9

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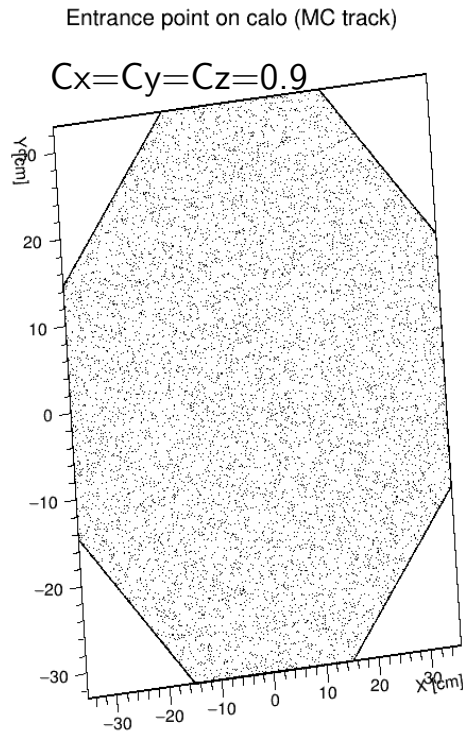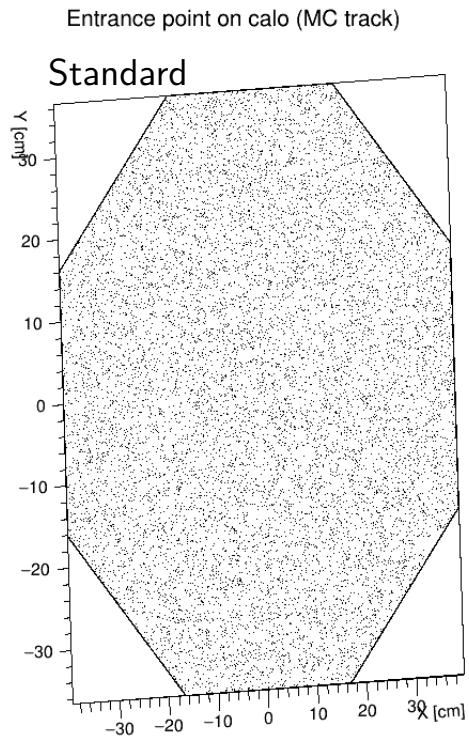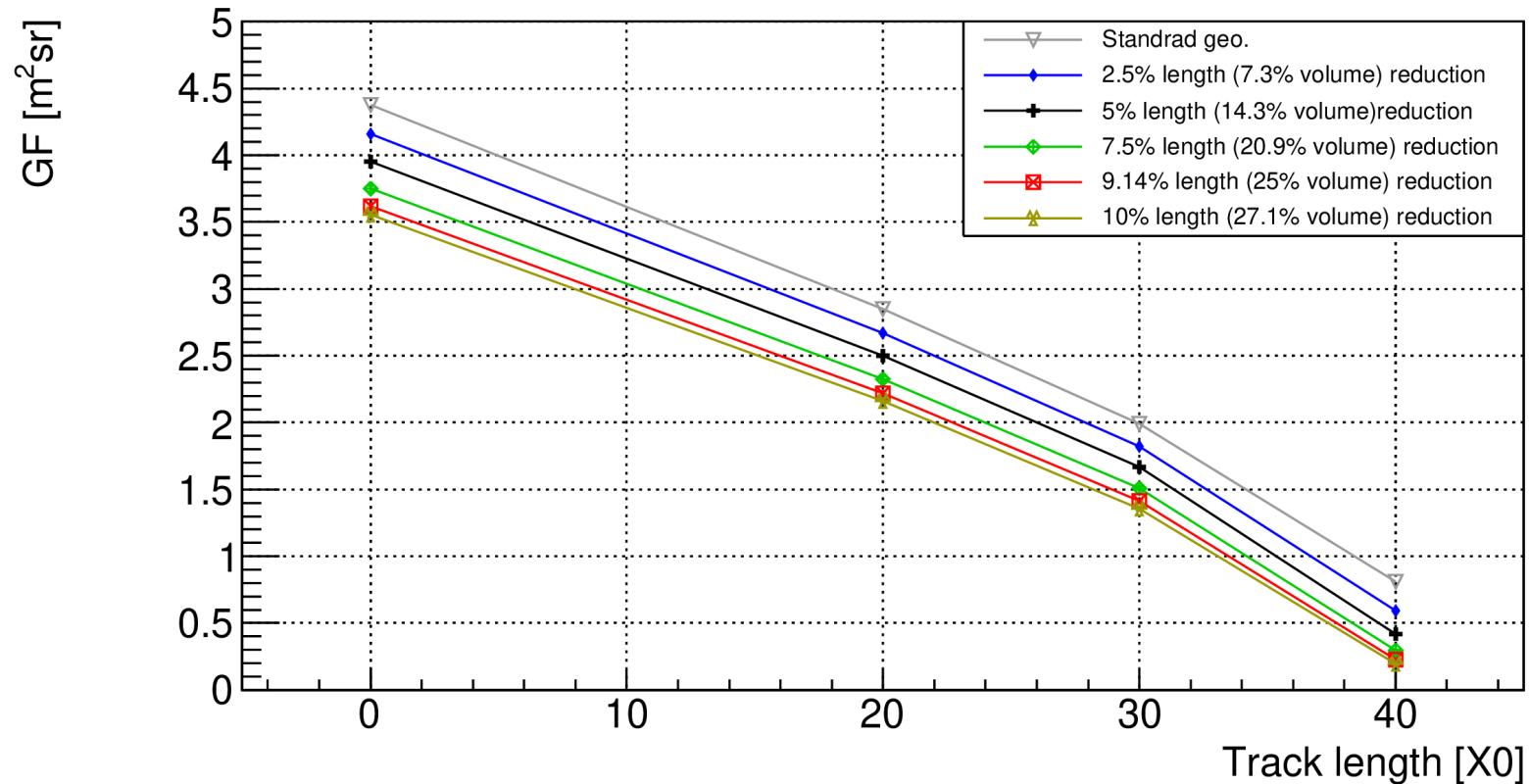
Geometric factors

◆ Rejecting particle with polar angle > 90 deg (in order to take int account CSS structures).

GF vs track length in calo

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Geometric factor ratios

GF ratio vs track length in calo

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