

RayTrace for GRINCH Mirror Test

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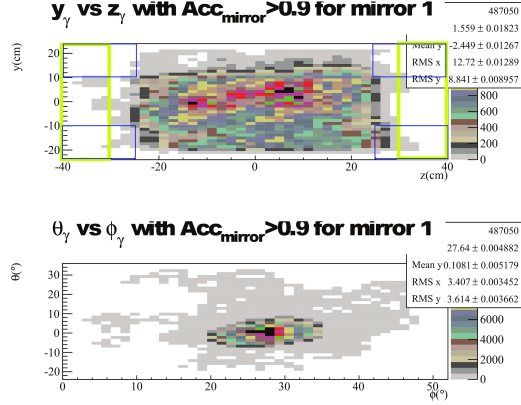


FIG. 1: The photon distribution on the mirror 1. The green cut box is called "band cut". The blue cut box is called "corner cut".

Photon on left edge of mirror	Position(y,z) (cm)	Angle(θ,ϕ)($^\circ$)
1	$(76.78 \pm 0.22, -19.36 \pm 0.15,)$	$(9.89 \pm 0.18, -8.68 \pm 0.18)$
2	$(18.36 \pm 0.06, -18.33 \pm 0.08,)$	$(-0.5 \pm 0.32, -8.08 \pm 0.06)$
3	$(-18.66 \pm 0.72, -18.53 \pm 0.13,)$	$(-5.03 \pm 0.32, -7.98 \pm 0.15)$
4	$(-55.54 \pm 0.02, -18.19 \pm 0.04,)$	$(-10.88 \pm 0.44, -9.11 \pm 0.07)$
Photon on right edge of mirror	Position(y,z) (cm)	Angle(θ,ϕ)($^\circ$)
1	$(58.4 \pm 0.55, 13.41 \pm 0.25,)$	$(4.72 \pm 0.36, 10.05 \pm 0.2)$
2	$(32.5 \pm 1.46, 16.85 \pm 0.23,)$	$(-0.07 \pm 0.43, 9.20 \pm 0.18)$
3	$(-38.5 \pm 0.40, 13.06 \pm 0.10,)$	$(-3.5 \pm 0.43, 13.1 \pm 0.09)$
4	$(-55.35 \pm 0.26, 18.22 \pm 0.12,)$	$(-11.36 \pm 0.22, 8.87 \pm 0.13)$

TABLE I: The position and angles on the gas Cherenkov entrance. Those positions are extrapolated from the position on the mirror based on "band cut" and angles. The center of the entrance is (0,0). y is vertical up, z is right. θ is vertical angle and ϕ is horizontal angle.

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Photon on left top edge of mirror	Position(y,z) (cm)	Angle(θ,ϕ)($^\circ$)
1	(82.89 \pm 0.09,-14.13 \pm 0.06,)	(10.87 \pm 0.06,-5.19 \pm 0.16)
2	(49.94 \pm 0.12,-14.87 \pm 0.04,)	(6.48 \pm 0.10,-5.31 \pm 0.05)
3	(-2.39 \pm 0.07,-14.41 \pm 0.04,)	(-2.89 \pm 0.04,-4.88 \pm 0.04)
4	(-55.63 \pm 0.08,-15.35 \pm 0.06,)	(-11.75 \pm 0.08,-6.23 \pm 0.06)
Photon on left bottom edge of mirror	Position(y,z) (cm)	Angle(θ,ϕ)($^\circ$)
1	(60.1 \pm 0.12,-15.47 \pm 0.07,)	(6.78 \pm 0.1,-5.47 \pm 0.08)
2	(6.92 \pm 0.09,-14.99 \pm 0.04,)	(-1.58 \pm 0.05,-5.24 \pm 0.05)
3	(-47.81 \pm 0.06,-15.14 \pm 0.03,)	(-10.12 \pm 0.04,-4.86 \pm 0.04)
4	(-80.6 \pm 0.1,-13.85 \pm 0.09,)	(-14.46 \pm 0.07,-5.35 \pm 0.13)
Photon on right top edge of mirror	Position(y,z) (cm)	Angle(θ,ϕ)($^\circ$)
1	(77.95 \pm 0.08,14.48 \pm 0.09,)	(12.21 \pm 0.07,6.4 \pm 0.08)
2	(48.75 \pm 0.07,14.75 \pm 0.04,)	(6.40 \pm 0.04,5.63 \pm 0.03)
3	(-0.54 \pm 0.08,14.72 \pm 0.05,)	(-2.49 \pm 0.06,6.57 \pm 0.05)
4	(-50.25 \pm 0.06,14.12 \pm 0.05,)	(-11.57 \pm 0.04,5.53 \pm 0.04)
Photon on right bottom edge of mirror	Position(y,z) (cm)	Angle(θ,ϕ)($^\circ$)
1	(55.5 \pm 0.05,14.24 \pm 0.03,)	(7.86 \pm 0.03,5.31 \pm 0.03)
2	(6.41 \pm 0.08,14.49 \pm 0.05,)	(-1.05 \pm 0.05,5.83 \pm 0.04)
3	(-45.45 \pm 0.12,14.31 \pm 0.07,)	(-9.56 \pm 0.09,7.04 \pm 0.06)
4	(-73.05 \pm 0.24,15.21 \pm 0.21,)	(-15.38 \pm 0.15,6.08 \pm 0.22)

TABLE II: The position and angles on the gas Cherenkov entrance. Those positions are extrapolated from the position on the mirror based on "corner cut" and angles. The center of the entrance is (0,0). y is vertical up, z is right. θ is vertical angle and ϕ is horizontal angle.