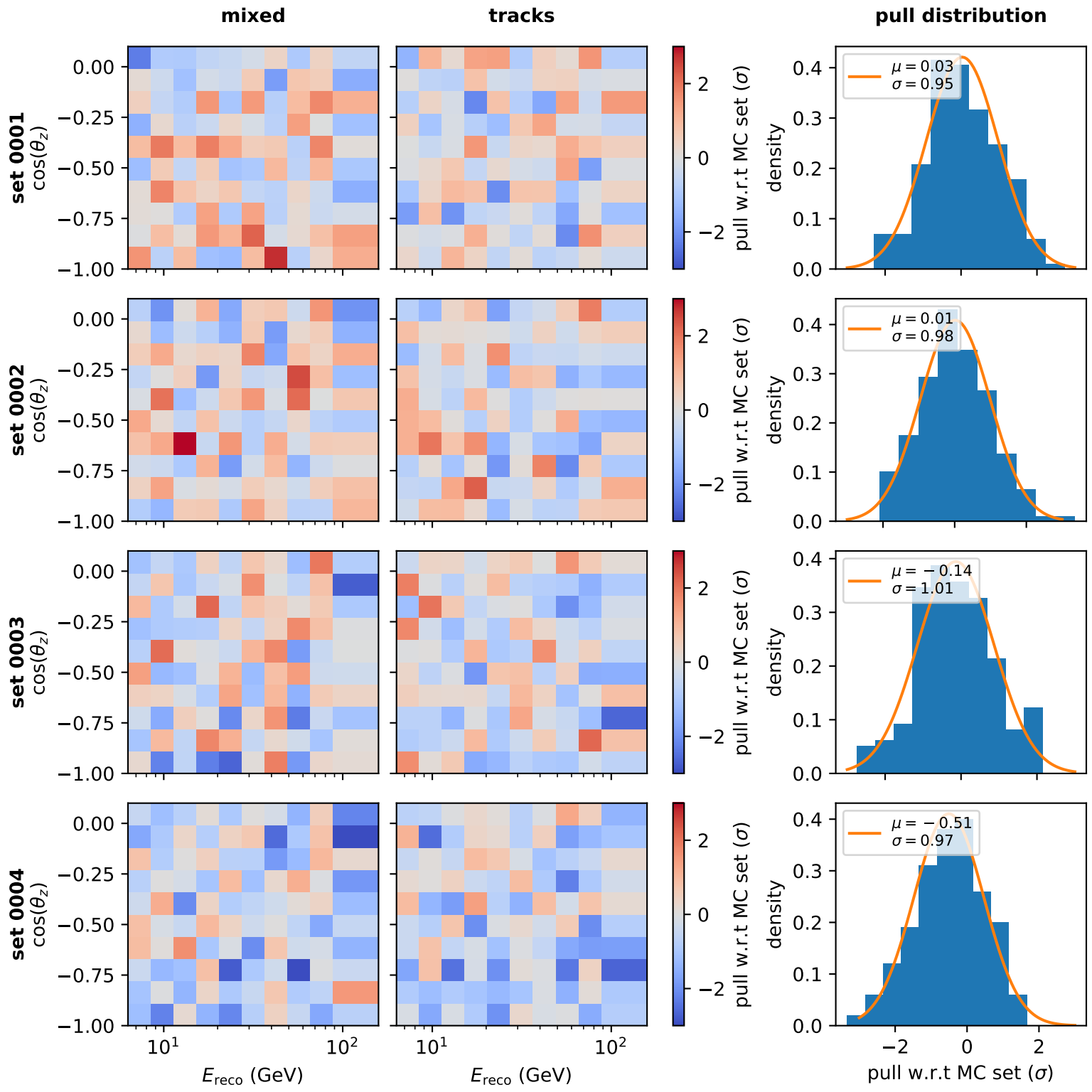
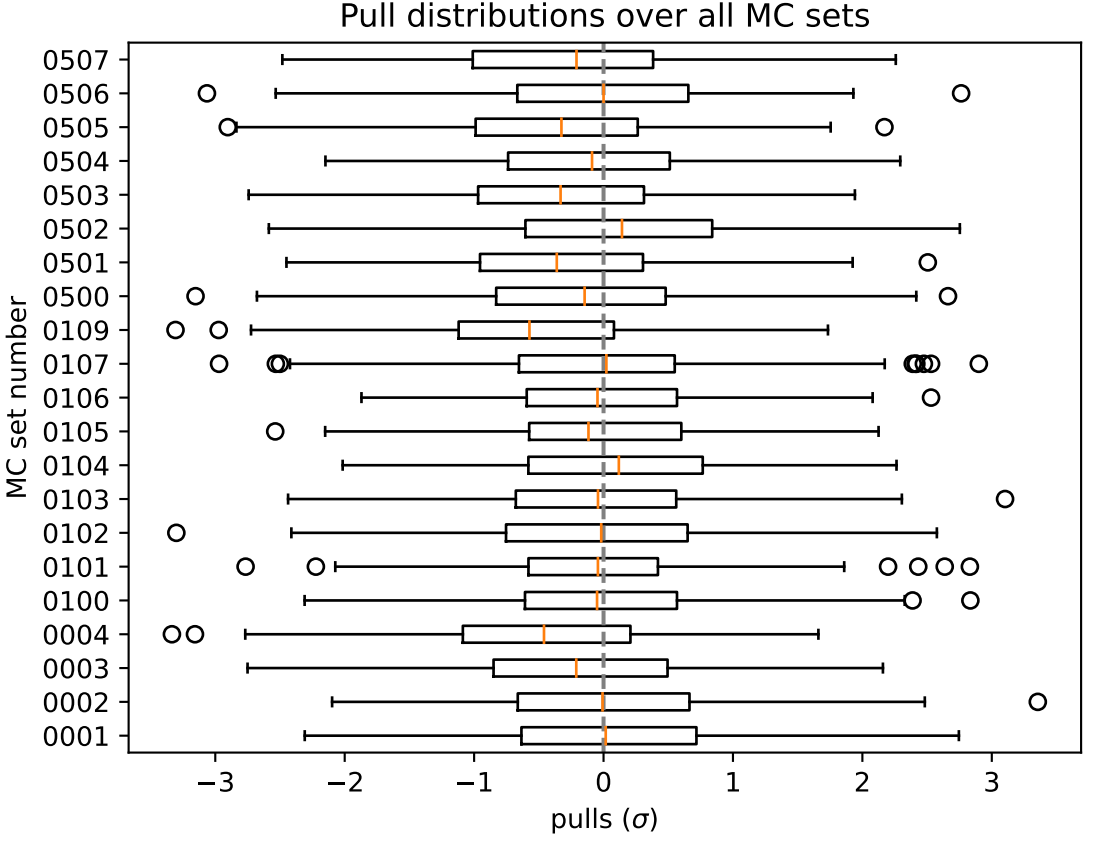
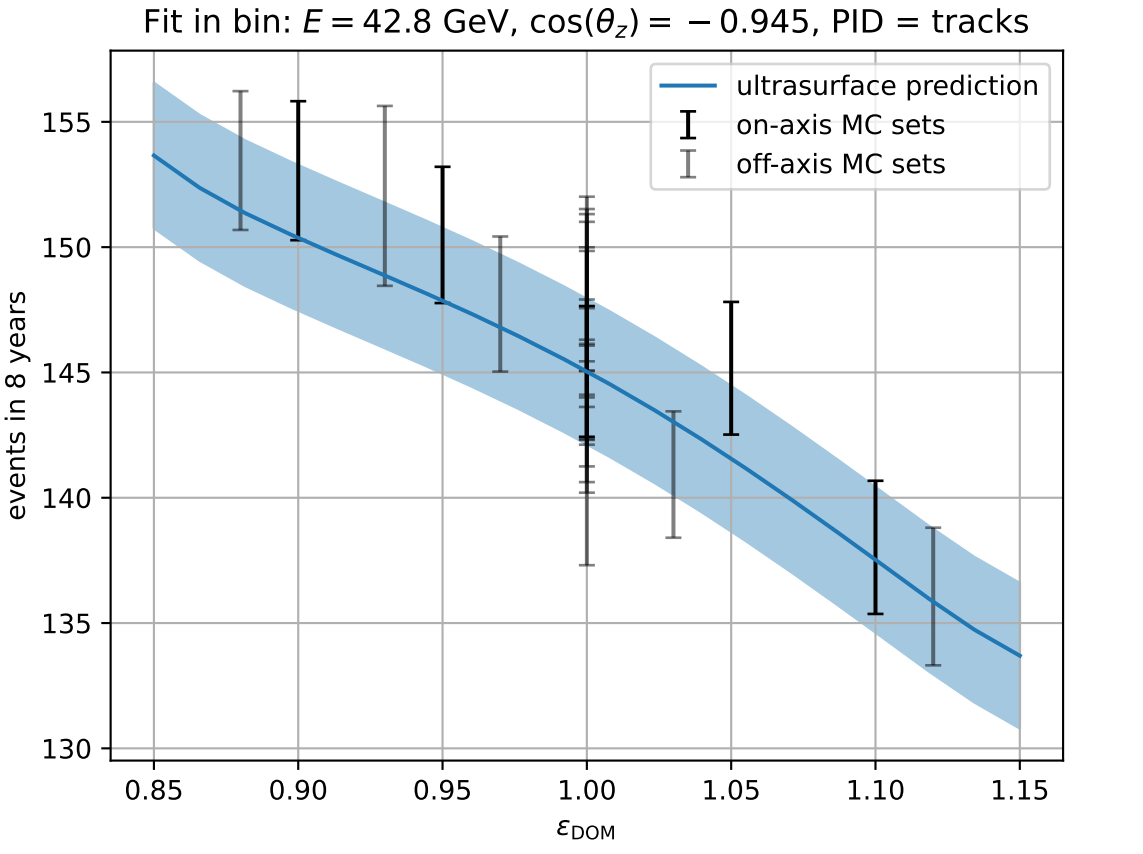
mixed | tracks | pull distribution

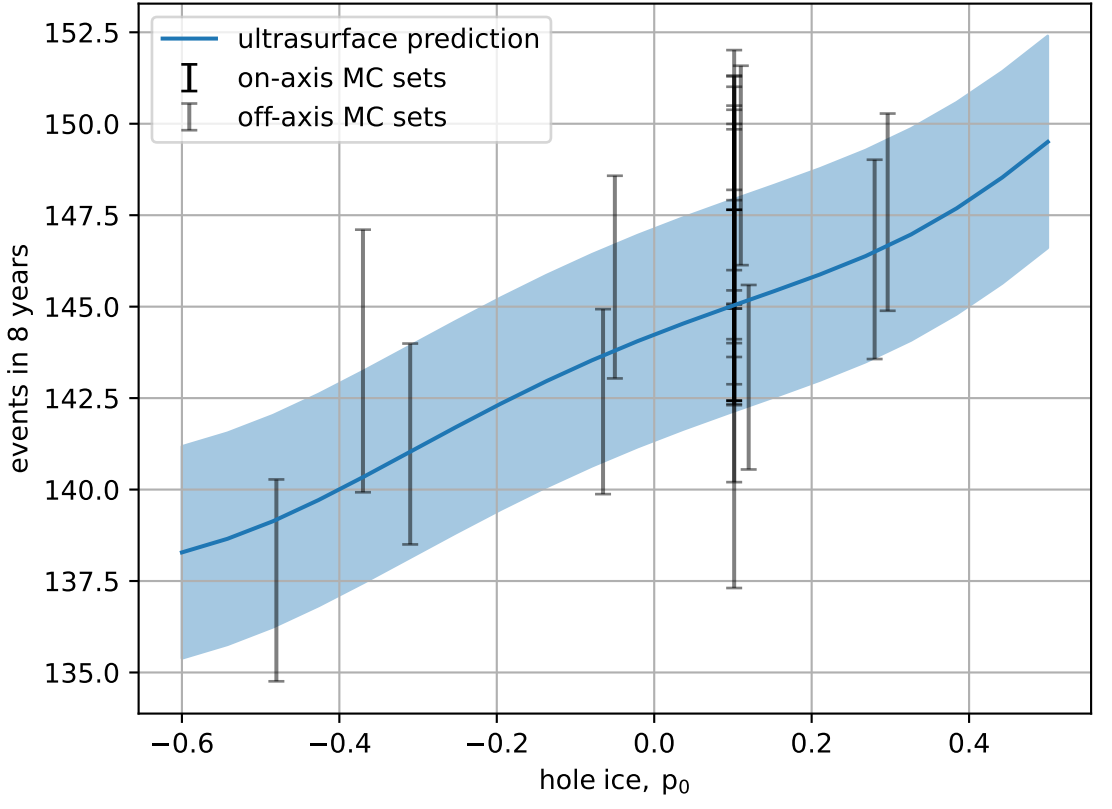
set 0001 — $\mu = 0.03$, $\sigma = 0.95$
set 0002 — $\mu = 0.01$, $\sigma = 0.98$
set 0003 — $\mu = -0.14$, $\sigma = 1.01$
set 0004 — $\mu = -0.51$, $\sigma = 0.97$
set 0100 — $\mu = -0.03$, $\sigma = 0.86$
set 0101 — $\mu = -0.06$, $\sigma = 0.88$
set 0102 — $\mu = -0.02$, $\sigma = 0.98$
set 0103 — $\mu = 0.00$, $\sigma = 0.90$
set 0104 — $\mu = 0.12$, $\sigma = 0.93$
set 0105 — $\mu = -0.06$, $\sigma = 0.90$
set 0106 — $\mu = -0.02$, $\sigma = 0.88$
set 0107 — $\mu = -0.01$, $\sigma = 1.04$
set 0109 — $\mu = -0.46$, $\sigma = 0.97$
set 0500 — $\mu = -0.18$, $\sigma = 0.98$
set 0501 — $\mu = -0.28$, $\sigma = 0.96$
set 0502 — $\mu = 0.10$, $\sigma = 1.02$
set 0503 — $\mu = -0.32$, $\sigma = 0.92$
set 0504 — $\mu = -0.10$, $\sigma = 0.84$
set 0505 — $\mu = -0.35$, $\sigma = 0.93$
set 0506 — $\mu = -0.04$, $\sigma = 0.96$
set 0507 — $\mu = -0.26$, $\sigma = 0.98$

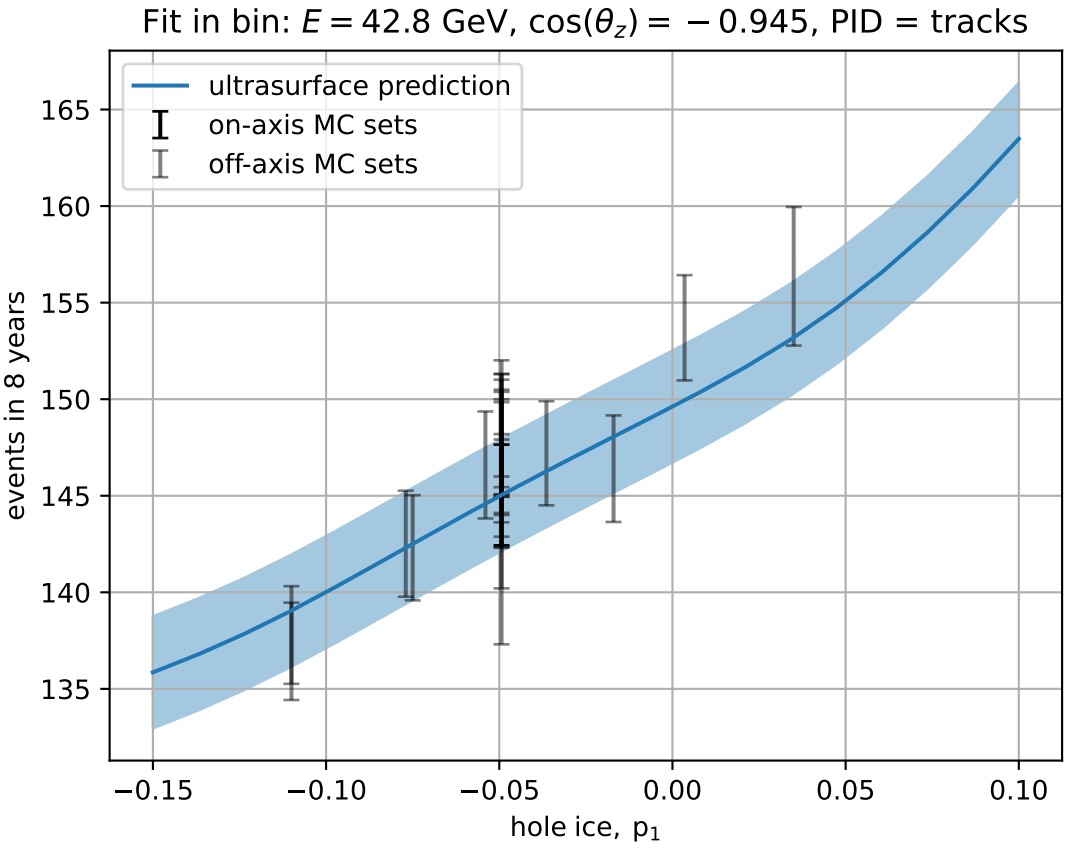
$\cos(\theta_z)$ | pull w.r.t MC set (σ) | density | E_{reco} (GeV) | pull w.r.t MC set (σ)

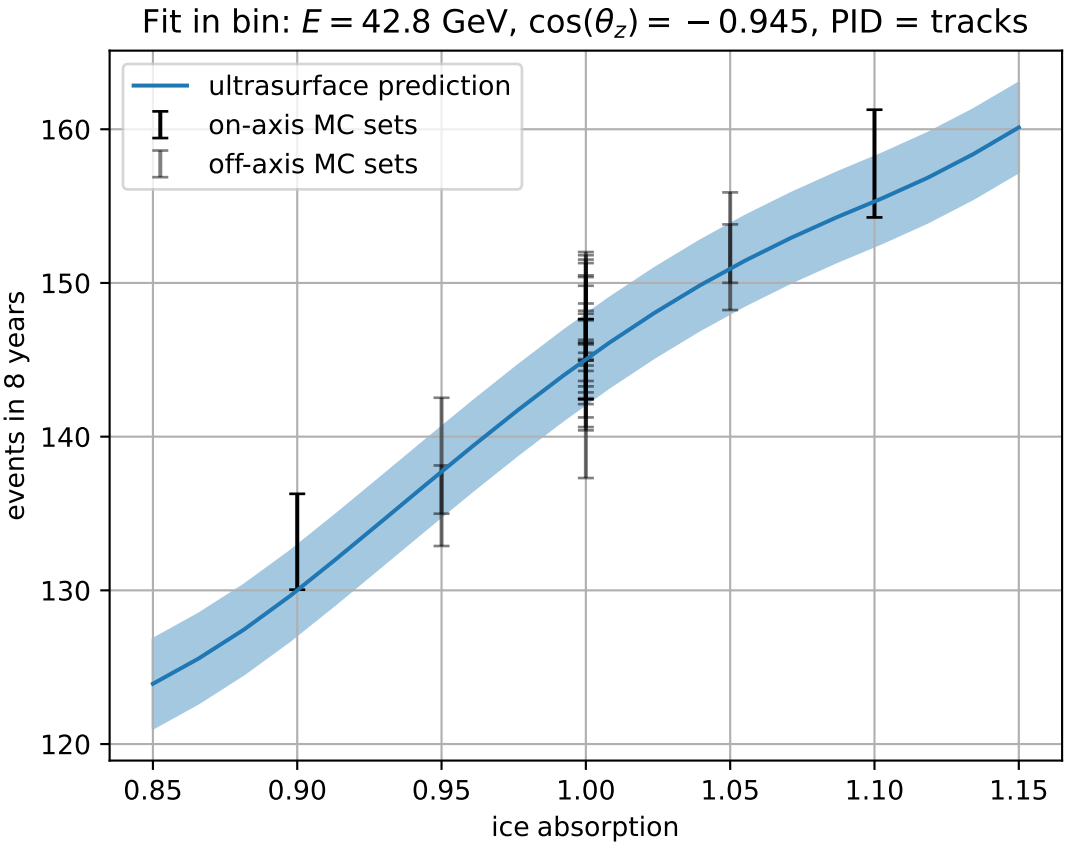

mixed
tracks
pull distribution
set 0001
set 0002
set 0003
set 0004
cos(θz)
0.00
−0.25
−0.50
−0.75
−1.00
pull w.r.t MC set (σ)
density
μ = 0.03
σ = 0.95
μ = 0.01
σ = 0.98
μ = −0.14
σ = 1.01
μ = −0.51
σ = 0.97
Ereco (GeV)
10^1
10^2

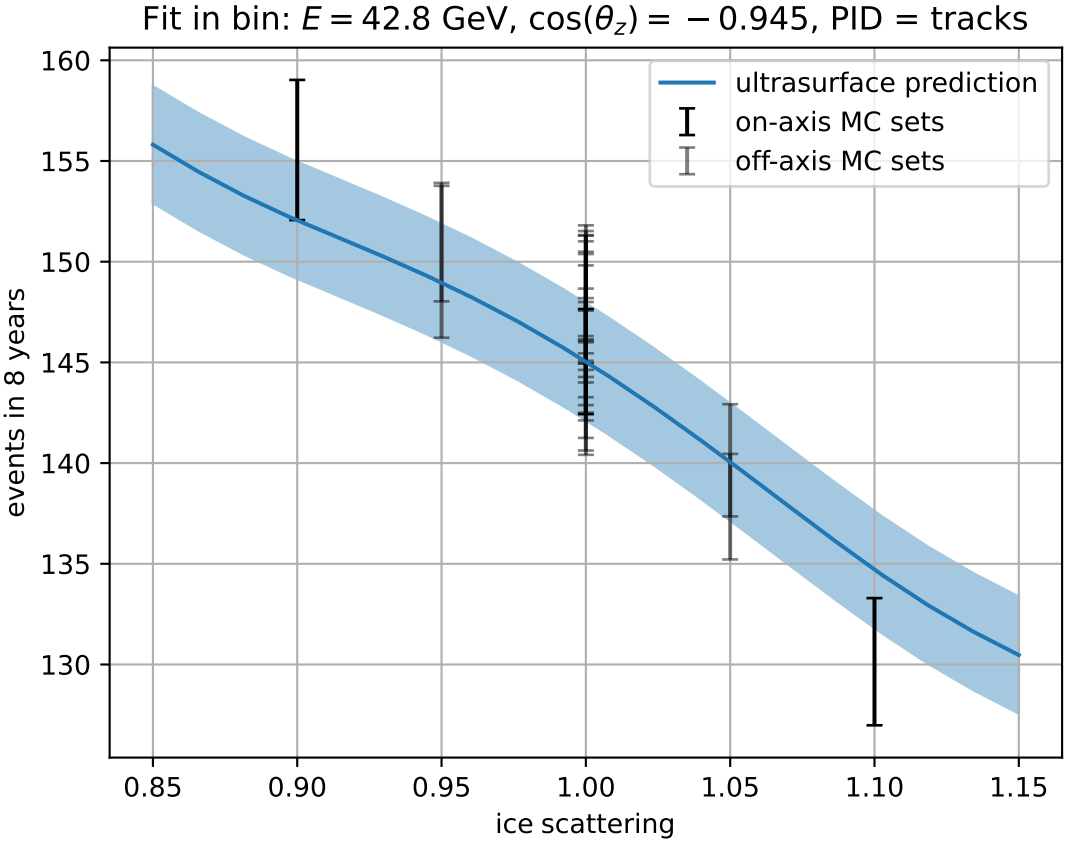

Pull distributions over all MC sets
MC set number
0507
0506
0505
0504
0503
0502
0501
0500
0109
0107
0106
0105
0104
0103
0102
0101
0100
0004
0003
0002
0001
−3
−2
−1
0
1
2
3
pulls (σ)

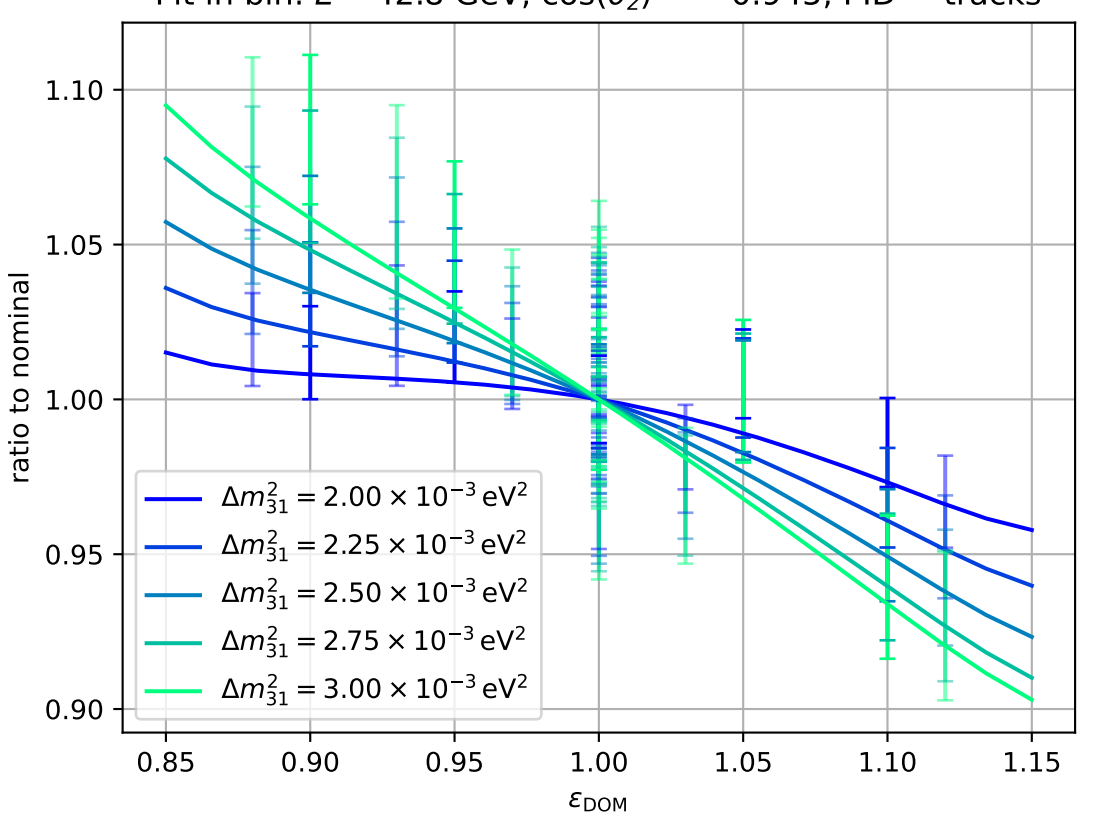

Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
ultrasurface prediction
on-axis MC sets
off-axis MC sets
events in 8 years
155
150
145
140
135
130
0.85
0.90
0.95
1.00
1.05
1.10
1.15
$\varepsilon_{\mathrm{DOM}}$

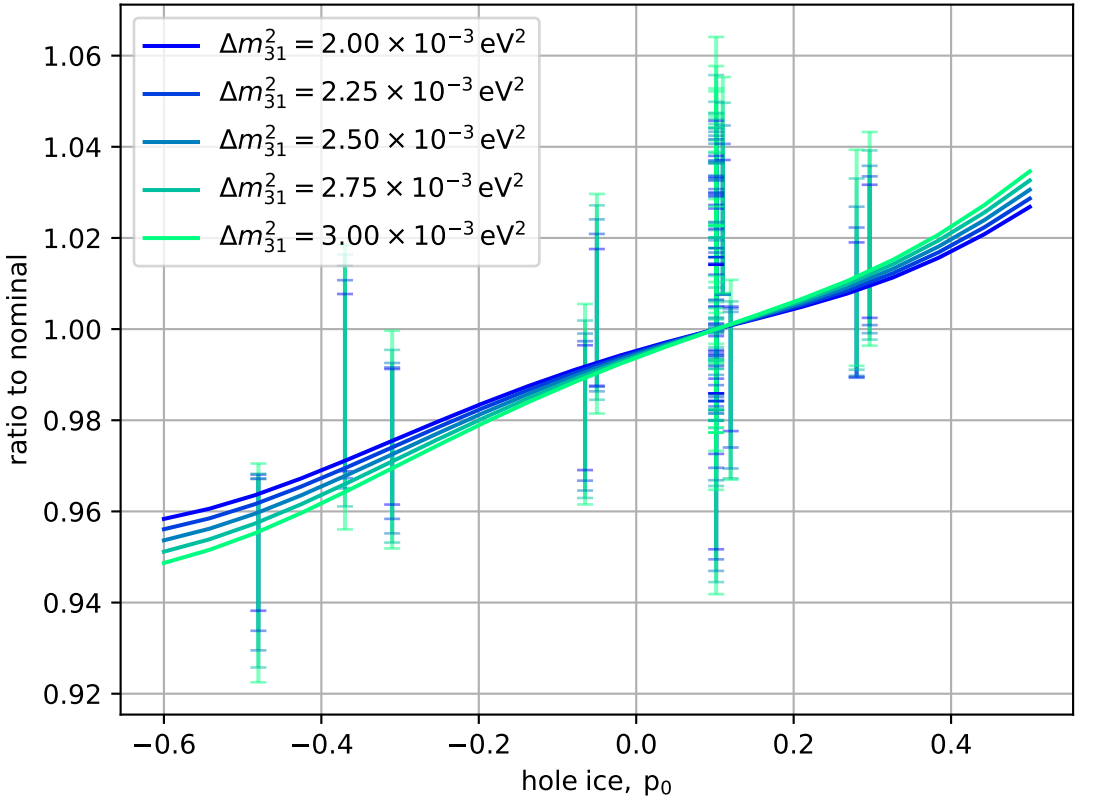

Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
ultrasurface prediction
on-axis MC sets
off-axis MC sets
events in 8 years
152.5
150.0
147.5
145.0
142.5
140.0
137.5
135.0
−0.6
−0.4
−0.2
0.0
0.2
0.4
hole ice, p_0

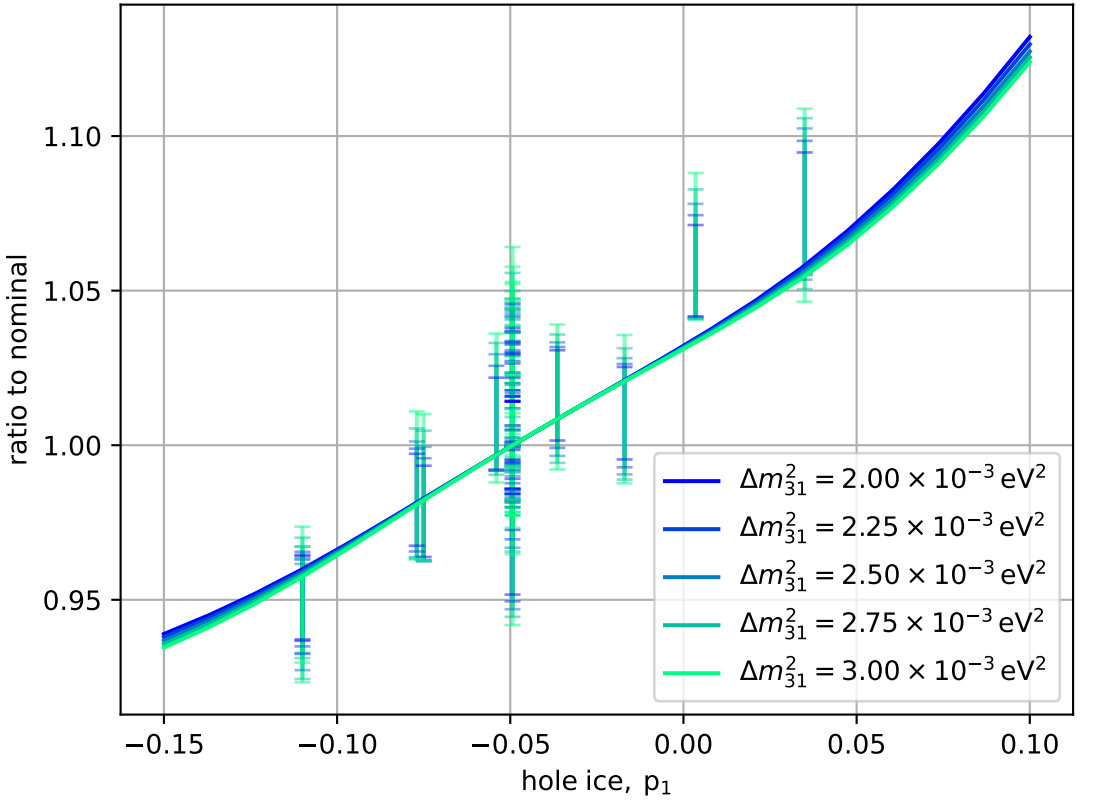

Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
ultrasurface prediction
on-axis MC sets
off-axis MC sets
events in 8 years
165
160
155
150
145
140
135
−0.15
−0.10
−0.05
0.00
0.05
0.10
hole ice, p_1

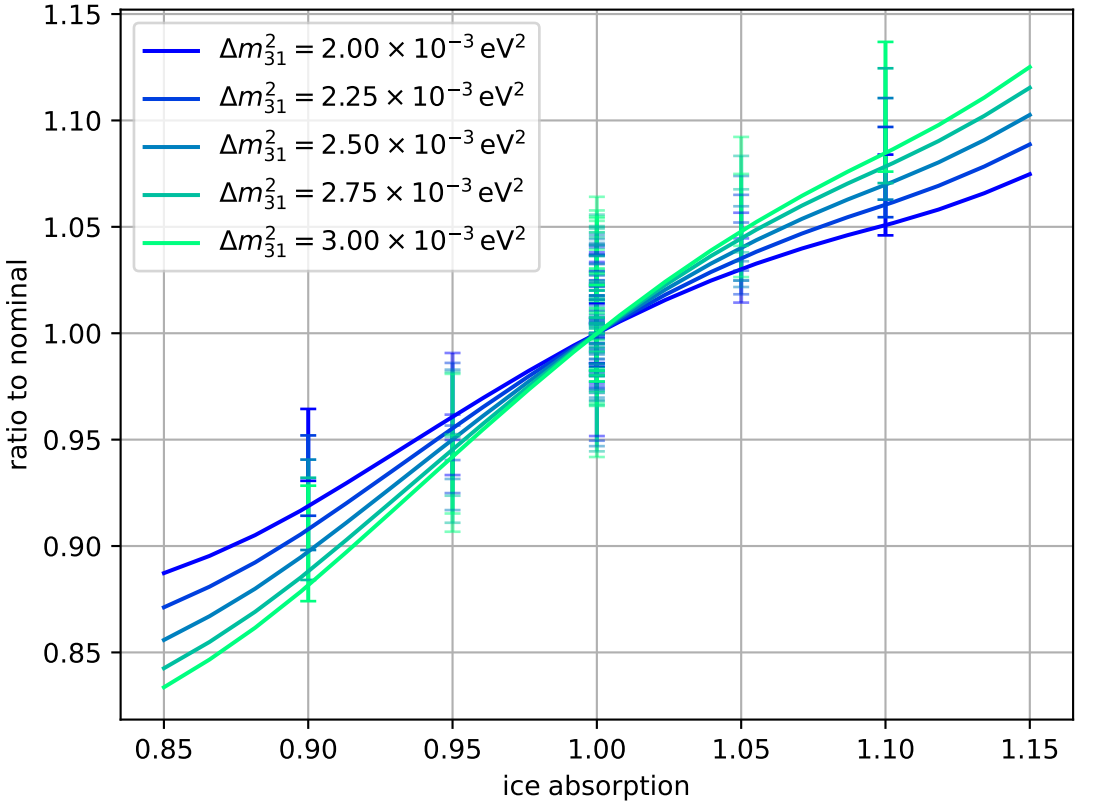

Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
ultrasurface prediction
on-axis MC sets
off-axis MC sets
events in 8 years
ice absorption
120
130
140
150
160
0.85
0.90
0.95
1.00
1.05
1.10
1.15

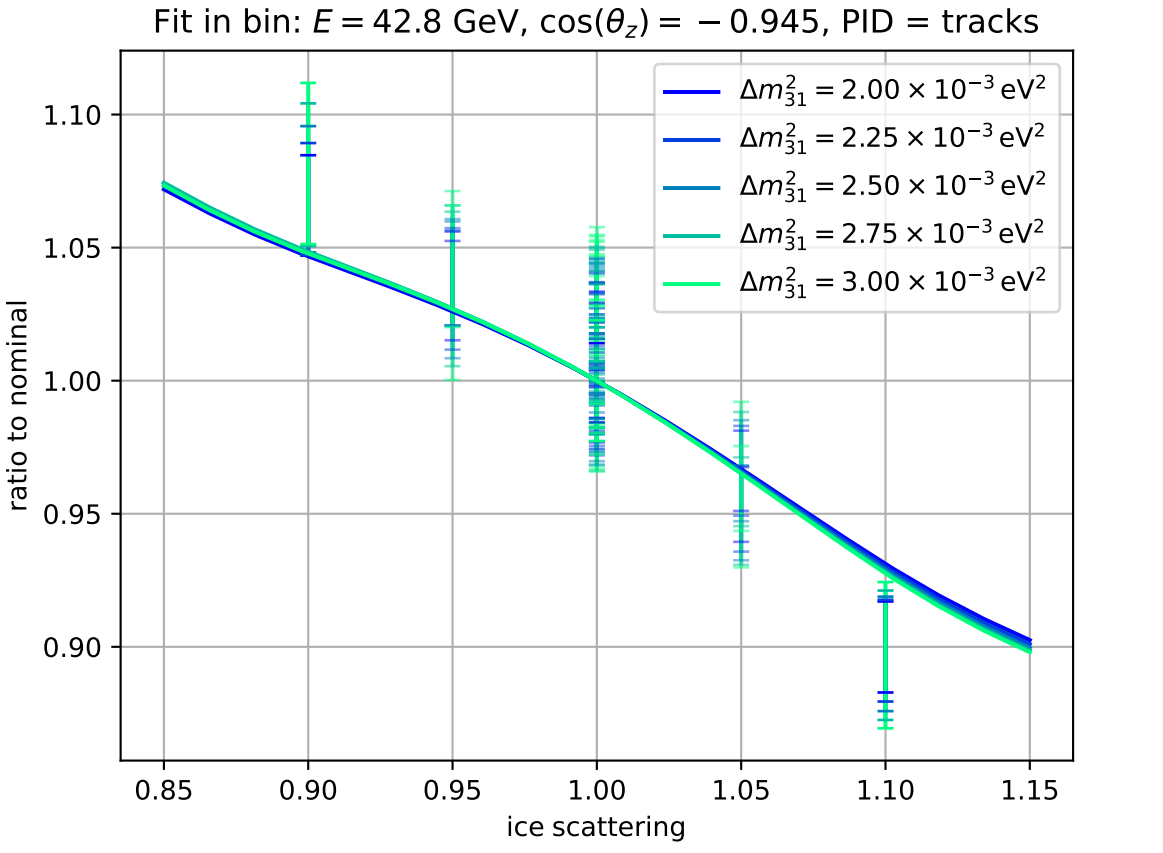

Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
ultrasurface prediction
on-axis MC sets
off-axis MC sets
events in 8 years
ice scattering
160
155
150
145
140
135
130
0.85
0.90
0.95
1.00
1.05
1.10
1.15


Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
ratio to nominal
1.10
1.05
1.00
0.95
0.90
0.85
0.90
0.95
1.00
1.05
1.10
1.15
$\varepsilon_{\mathrm{DOM}}$
$\Delta m^2_{31} = 2.00 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.25 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.50 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.75 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 3.00 \times 10^{-3}\,\mathrm{eV}^2$


Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
$\Delta m^2_{31} = 2.00 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.25 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.50 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.75 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 3.00 \times 10^{-3}\,\mathrm{eV}^2$
ratio to nominal
1.06
1.04
1.02
1.00
0.98
0.96
0.94
0.92
−0.6
−0.4
−0.2
0.0
0.2
0.4
hole ice, p_0


Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
ratio to nominal
1.10
1.05
1.00
0.95
−0.15
−0.10
−0.05
0.00
0.05
0.10
hole ice, p_1
$\Delta m^2_{31} = 2.00 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.25 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.50 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.75 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 3.00 \times 10^{-3}\,\mathrm{eV}^2$


Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
$\Delta m^2_{31} = 2.00 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.25 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.50 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.75 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 3.00 \times 10^{-3}\,\mathrm{eV}^2$
ratio to nominal
1.15
1.10
1.05
1.00
0.95
0.90
0.85
ice absorption
0.85
0.90
0.95
1.00
1.05
1.10
1.15


Fit in bin: $E = 42.8$ GeV, $\cos(\theta_z) = -0.945$, PID = tracks
$\Delta m^2_{31} = 2.00 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.25 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.50 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 2.75 \times 10^{-3}\,\mathrm{eV}^2$
$\Delta m^2_{31} = 3.00 \times 10^{-3}\,\mathrm{eV}^2$
ratio to nominal
1.10
1.05
1.00
0.95
0.90
0.85
0.90
0.95
1.00
1.05
1.10
1.15
ice scattering

ϵ_{DOM}, mixed channel

ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio
0.8
1.0
1.2
0.9
1.1
ϵ_{DOM}

ϵ_{DOM}, tracks channel

ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio
0.8
1.0
1.2
0.9
1.1
ϵ_{DOM}

hole ice, p_0, mixed channel

ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio
1.2
1.0
0.8
−0.5
0.0
0.5
hole ice, p_0

hole ice, p_0, tracks channel

ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio
1.2
1.0
0.8
−0.5
0.0
0.5
hole ice, p_0

hole ice, p_1, mixed channel

ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio

1.2
1.0
0.8

−0.1 0.0 0.1

hole ice, p_1

hole ice, p_1, tracks channel

ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio

1.2
1.0
0.8

−0.1 0.0 0.1

hole ice, p_1

ice absorption, mixed channel

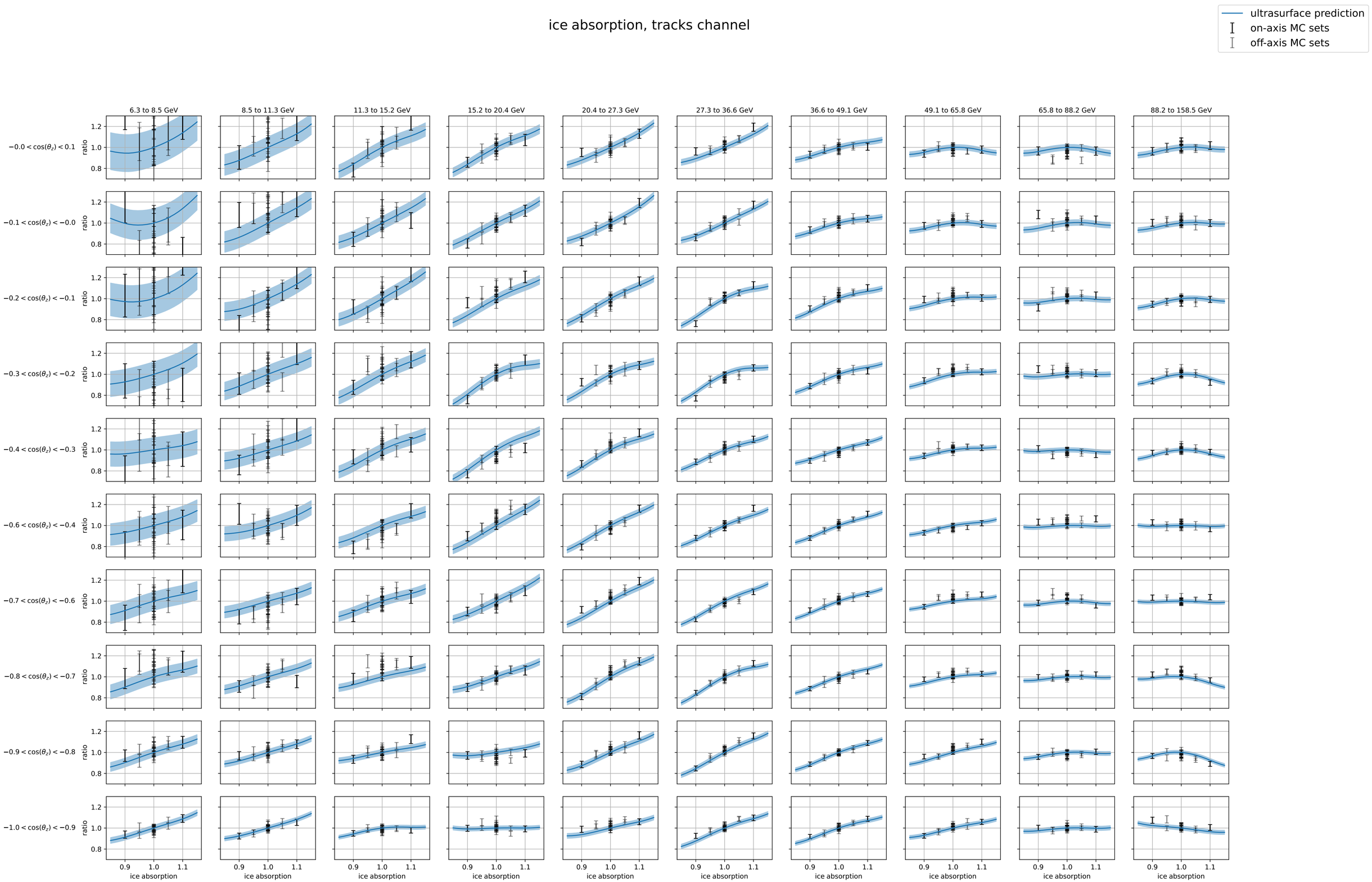
ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio
0.8
1.0
1.2
0.9
1.0
1.1
ice absorption

ice absorption, tracks channel



ice scattering, mixed channel

ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio
1.2
1.0
0.8
0.9
1.0
1.1
ice scattering

ice scattering, tracks channel

ultrasurface prediction
on-axis MC sets
off-axis MC sets

6.3 to 8.5 GeV | 8.5 to 11.3 GeV | 11.3 to 15.2 GeV | 15.2 to 20.4 GeV | 20.4 to 27.3 GeV | 27.3 to 36.6 GeV | 36.6 to 49.1 GeV | 49.1 to 65.8 GeV | 65.8 to 88.2 GeV | 88.2 to 158.5 GeV

$-0.0 < \cos(\theta_z) < 0.1$
$-0.1 < \cos(\theta_z) < -0.0$
$-0.2 < \cos(\theta_z) < -0.1$
$-0.3 < \cos(\theta_z) < -0.2$
$-0.4 < \cos(\theta_z) < -0.3$
$-0.6 < \cos(\theta_z) < -0.4$
$-0.7 < \cos(\theta_z) < -0.6$
$-0.8 < \cos(\theta_z) < -0.7$
$-0.9 < \cos(\theta_z) < -0.8$
$-1.0 < \cos(\theta_z) < -0.9$

ratio
1.2
1.0
0.8
0.9
1.0
1.1
ice scattering