

Run 300000, Event 689569132, $\mu = 62.5$, $N_{\text{PV}} = 31$

Truth (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (91.3, 210.7, -0.40)

Reco (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (91.3, 206.9, -0.40)

$\Delta\phi(\text{ll}, j1) = -3.03$, $\Delta R_{j1}^{\text{tru-rec}} = 0.01$

2 truth muons, (p_{T} /GeV, y , ϕ)

(194.1, -0.39, 1.89)

(35.5, -0.42, 3.06)

2 reco muons, (p_{T} /GeV, y , ϕ)

(189.8, -0.39, 1.89)

(36.3, -0.42, 3.06)

36 truth jets, (p_{T} /GeV, y , ϕ)

(137.0, 0.47, -1.20)

(18.0, 1.74, 1.71)

(7.9, -2.62, 0.18)

(5.3, 0.37, -1.65)

(2.6, 5.28, -1.27)

(2.3, 1.46, 2.17)

(2.1, -2.87, 1.20)

(2.1, 2.43, 1.67)

(2.1, -4.75, -1.36)

(1.6, 2.70, 2.13)

(1.6, 2.65, 1.25)

(1.5, -6.14, -2.27)

(1.4, -3.46, -2.19)

(1.4, 4.19, -2.20)

(1.3, 5.04, -1.64)

(1.1, -4.61, -2.21)

(0.9, 3.39, 2.10)

(0.9, 2.39, 0.87)

(0.8, -5.97, -0.59)

(0.7, 0.87, -0.25)

(0.7, -1.35, 2.71)

(0.7, 0.97, -2.29)

(0.7, -0.44, -3.05)

(0.7, 2.40, -0.30)

(0.7, -3.55, -0.96)

(0.7, -5.42, -2.28)

(0.6, 8.39, -0.79)

(0.6, -3.02, 0.82)

(0.6, -6.29, -1.09)

(0.6, 4.16, 1.32)

(0.6, -3.36, 1.82)

(0.6, 3.41, -1.83)

(0.6, -1.70, 1.95)

(0.6, 2.98, -2.85)

(0.5, 3.14, 1.45)

(0.5, -0.78, -0.42)

16 reco jets, (p_{T} /GeV, y , ϕ)

(134.5, 0.47, -1.20)

(4.6, -2.47, 0.23)

(3.8, 0.49, -1.69)

(2.2, 1.60, -2.96)

(1.1, 2.36, -1.56)

(0.8, 2.38, 0.87)

(0.8, 0.87, -0.25)

(0.7, 1.73, 1.40)

(0.7, -1.35, 2.71)

(0.7, -0.52, -3.06)

(0.7, 2.41, -0.29)

(0.7, 0.97, -2.29)

(0.6, -1.70, 1.96)

(0.5, -0.78, -0.42)

(0.5, 1.90, 2.11)

(0.5, 2.34, 0.22)

40 charged truth hadrons, $p_{\text{T}} > 0.5$, $|y| < 2.5$

(24.2, 0.44, -1.21)

(15.0, 0.47, -1.19)

37 tracks, first 4

(24.1, 0.44, -1.21), matched to π^+

(15.2, 0.45, -1.19), matched to π^+

(13.9, 0.41, -1.22), matched to p

(13.4, 0.47, -1.19), matched to π^-

20 j1 tracks, (p_{T} /GeV, y , η , ϕ)

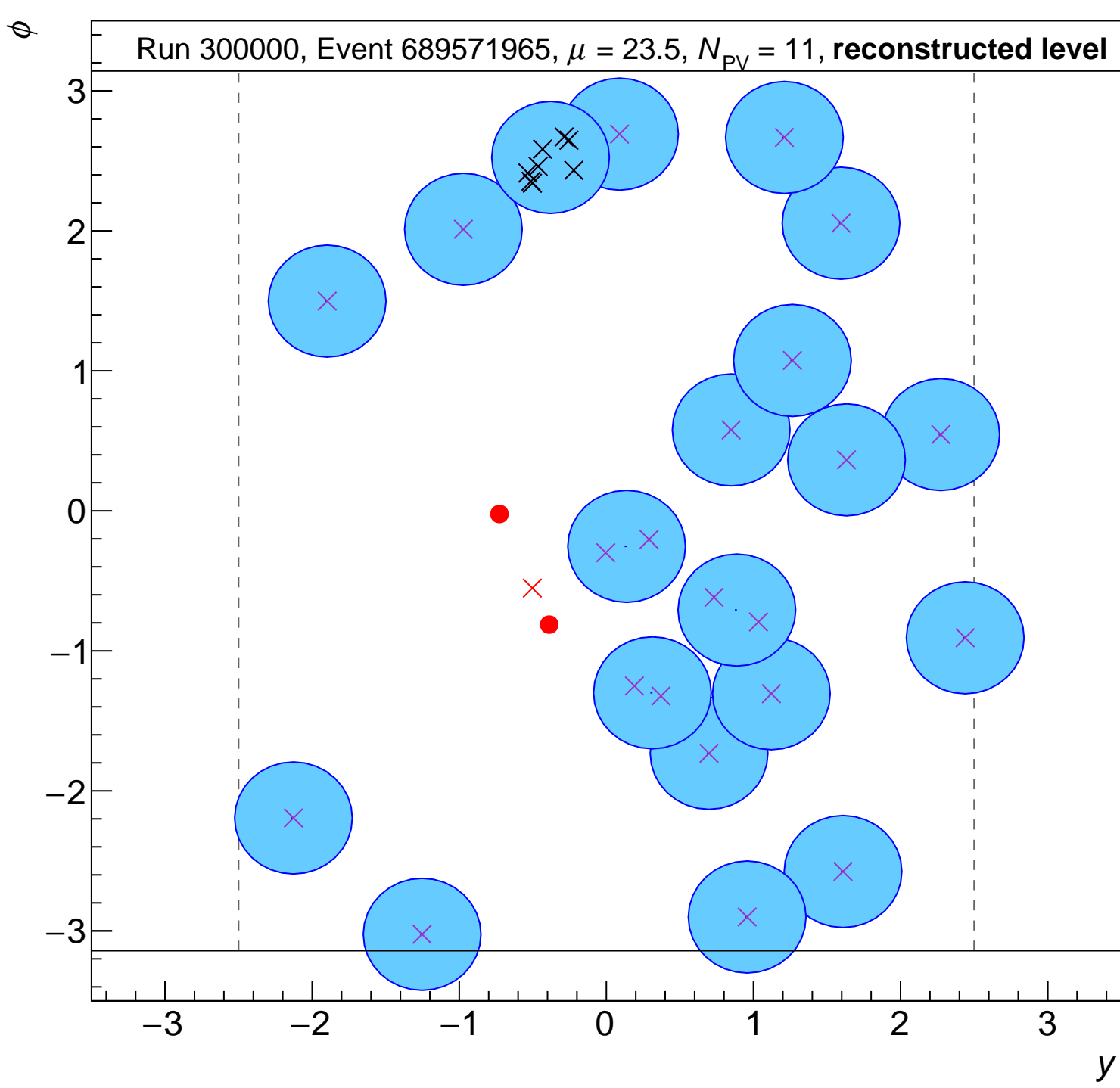
(1.5, 0.28, 0.28, -1.50),

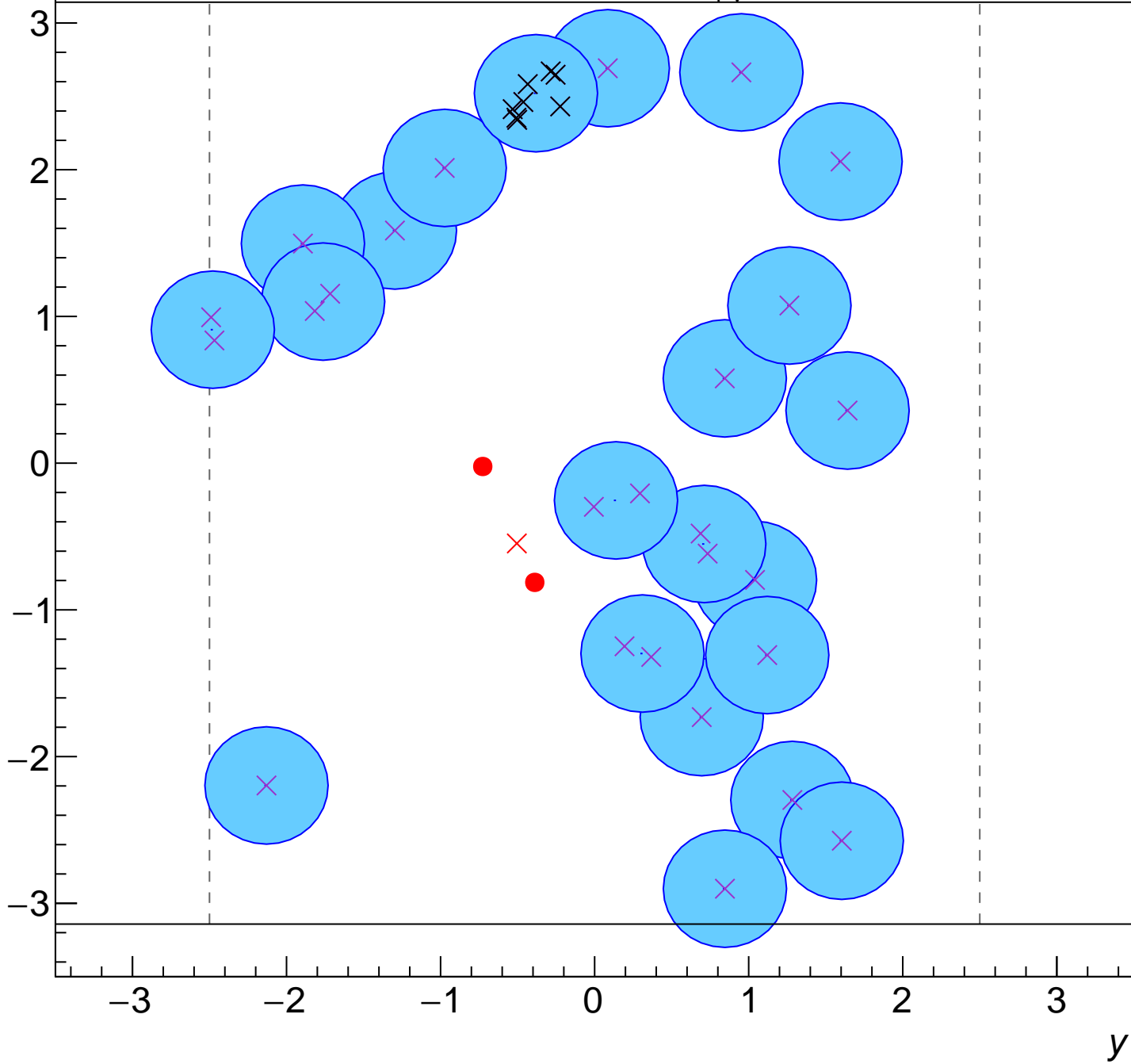
(0.6, 0.22, 0.23, -1.41),

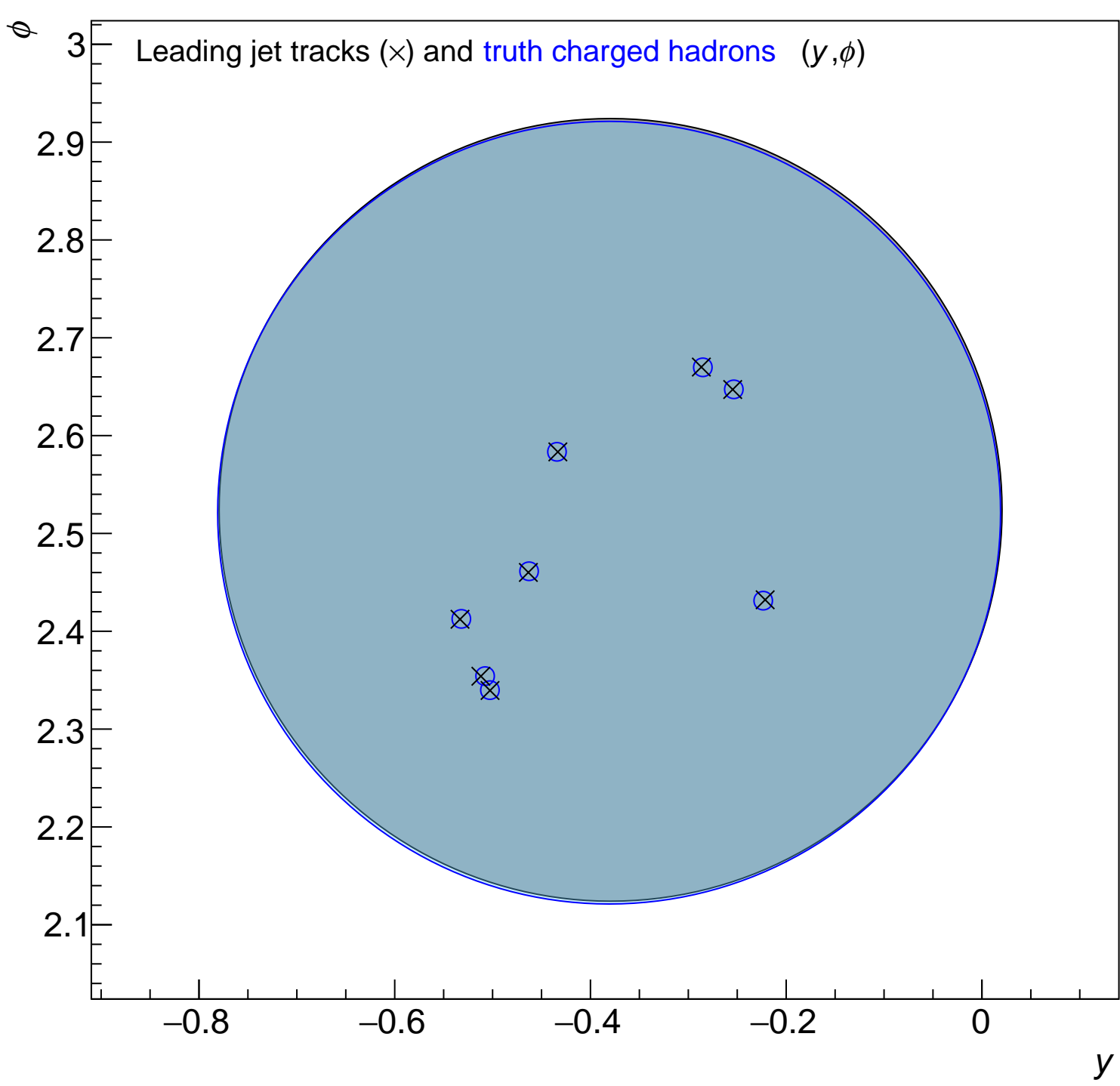
(4.3, 0.64, 0.64, -1.12),

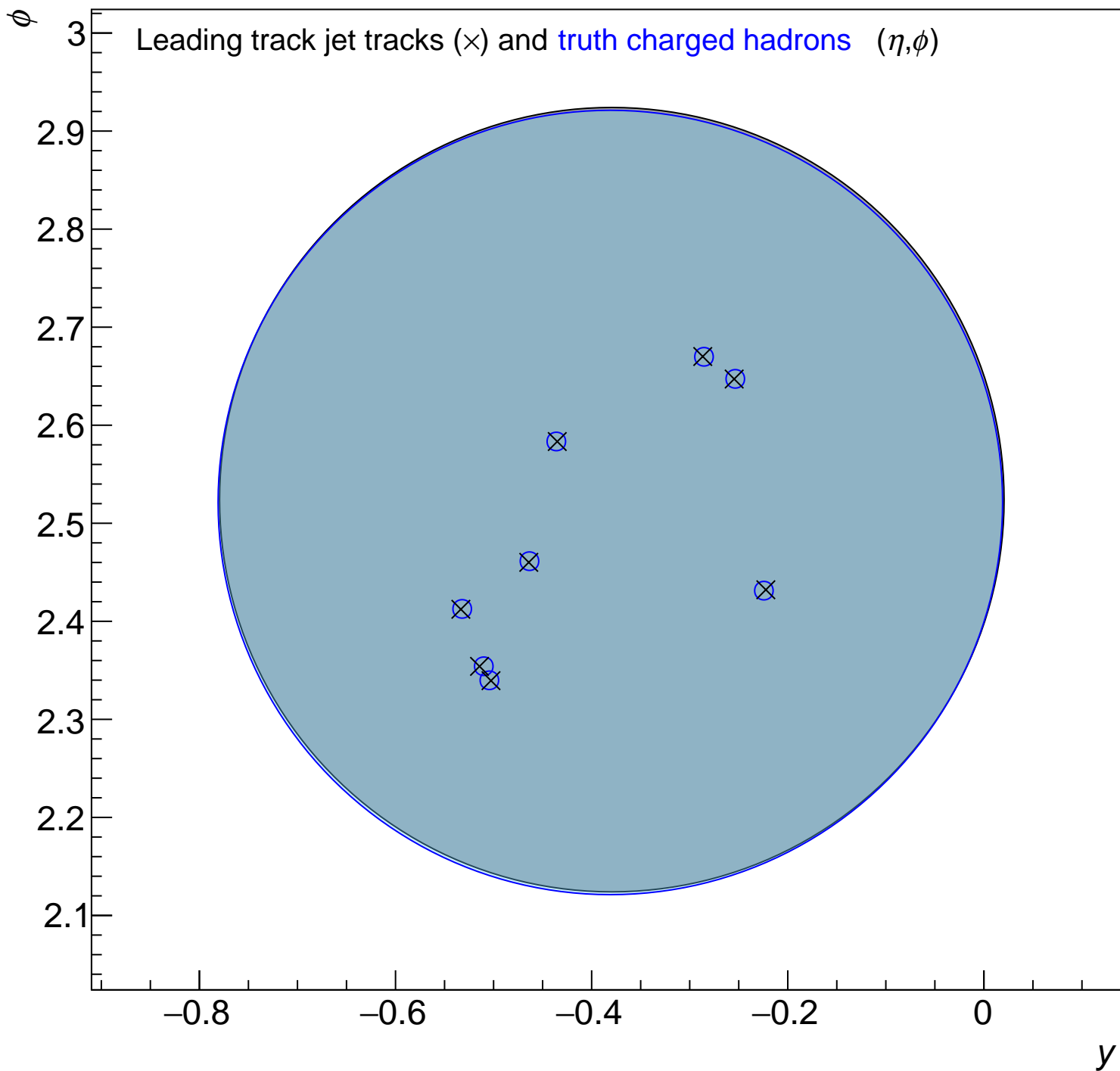
(6.8, 0.61, 0.61, -1.08),

(6.6, 0.59, 0.59, -1.07),



ϕ Run 300000, Event 689571965, $\mu = 23.5$, $N_{\text{PV}} = 11$, **particle level**





Run 300000, Event 689571965, $\mu = 23.5$, $N_{\text{PV}} = 11$

Truth (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (91.0, 212.2, -0.51)

Reco (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (94.0, 220.0, -0.50)

$\Delta\phi(\text{ll}, j1) = -3.08$, $\Delta R_{j1}^{\text{tru-rec}} = 0.00$

2 truth muons, (p_{T} /GeV, y , ϕ)

(149.6, -0.39, -0.81)

(78.3, -0.73, -0.02)

2 reco muons, (p_{T} /GeV, y , ϕ)

(156.3, -0.39, -0.81)

(79.8, -0.73, -0.02)

46 truth jets, (p_{T} /GeV, y , ϕ)

(49.6, -0.38, 2.52)

(4.6, -3.66, -0.41)

(4.1, 4.59, -1.10)

(3.1, -3.30, 0.40)

(2.7, 1.26, 1.07)

(2.5, 3.03, 1.06)

(2.4, 3.30, 2.19)

(2.2, 5.33, 2.40)

(2.0, 4.29, 1.57)

(2.0, 0.31, -1.30)

(1.9, -2.89, 0.82)

(1.8, 3.86, -1.55)

(1.8, -2.48, 0.91)

(1.7, -2.99, -0.15)

(1.5, 4.45, -2.71)

(1.5, 0.85, -2.90)

(1.5, 0.14, -0.25)

(1.5, -1.76, 1.10)

(1.5, -1.89, 1.50)

(1.3, 5.33, -2.94)

(1.2, 3.21, -0.83)

(1.2, 3.58, 1.84)

(1.1, 1.60, -2.57)

(1.1, -0.97, 2.01)

(1.1, 3.68, 0.98)

(1.0, 0.71, -0.55)

(1.0, 1.12, -1.31)

(1.0, -3.85, -0.03)

(1.0, 0.09, 2.69)

(1.0, 0.95, 2.66)

(0.9, -4.38, -0.60)

(0.8, 0.84, 0.58)

(0.8, 5.11, 2.88)

(0.7, 1.64, 0.36)

(0.7, 1.60, 2.06)

(0.7, 1.28, -2.30)

(0.6, 4.16, -1.04)

(0.6, -8.11, 0.37)

(0.6, 0.70, -1.73)

(0.6, 1.04, -0.80)

(0.6, -2.92, -3.04)

(0.6, -2.13, -2.20)

(0.6, -7.56, -0.74)

(0.5, -5.93, 2.67)

(0.5, -1.30, 1.59)

(0.5, 5.34, -2.45)

20 reco jets, (p_{T} /GeV, y , ϕ)

(48.9, -0.38, 2.52)

(2.7, 1.26, 1.07)

(2.0, 0.31, -1.30)

(1.6, 0.96, -2.90)

(1.5, -1.90, 1.50)

(1.5, 0.14, -0.25)

(1.3, -1.25, -3.02)

(1.1, 1.61, -2.58)

(1.1, 0.89, -0.71)

(1.1, -0.97, 2.01)

(1.0, 1.12, -1.31)

(1.0, 0.09, 2.69)

(0.9, 1.21, 2.67)

(0.9, 2.44, -0.91)

(0.8, 0.85, 0.58)

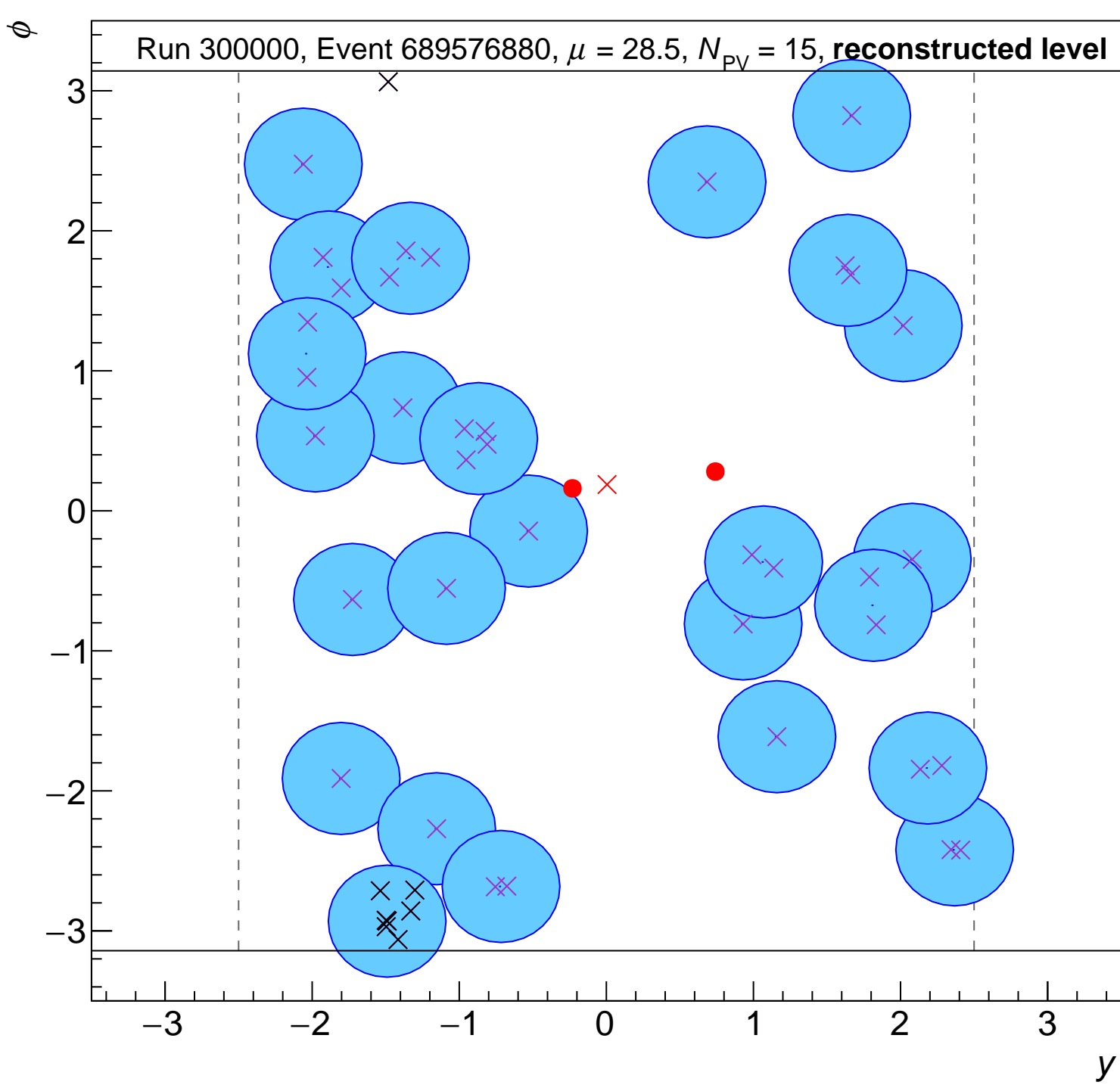
(0.7, 1.63, 0.36)

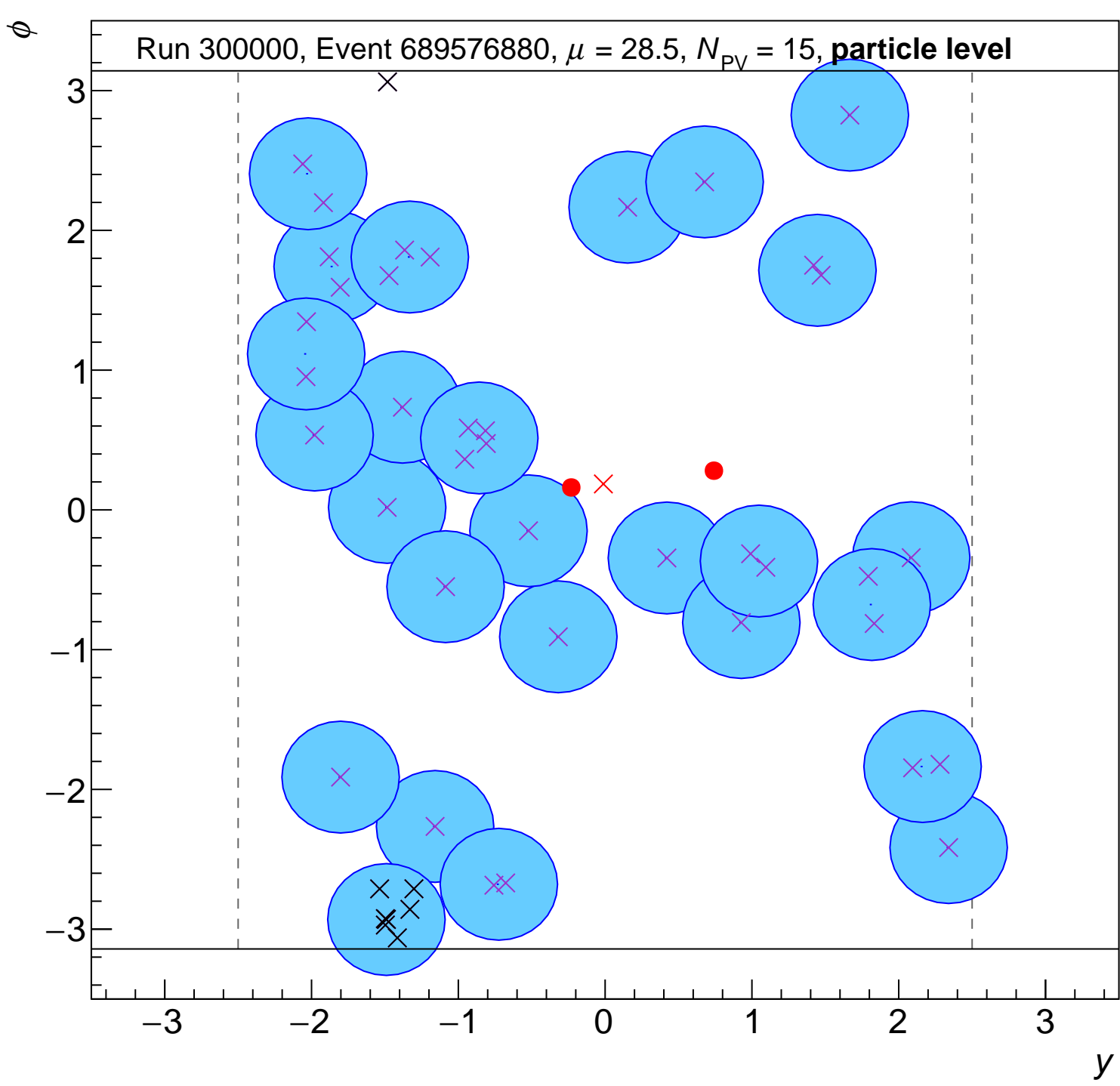
(0.7, 1.60, 2.05)

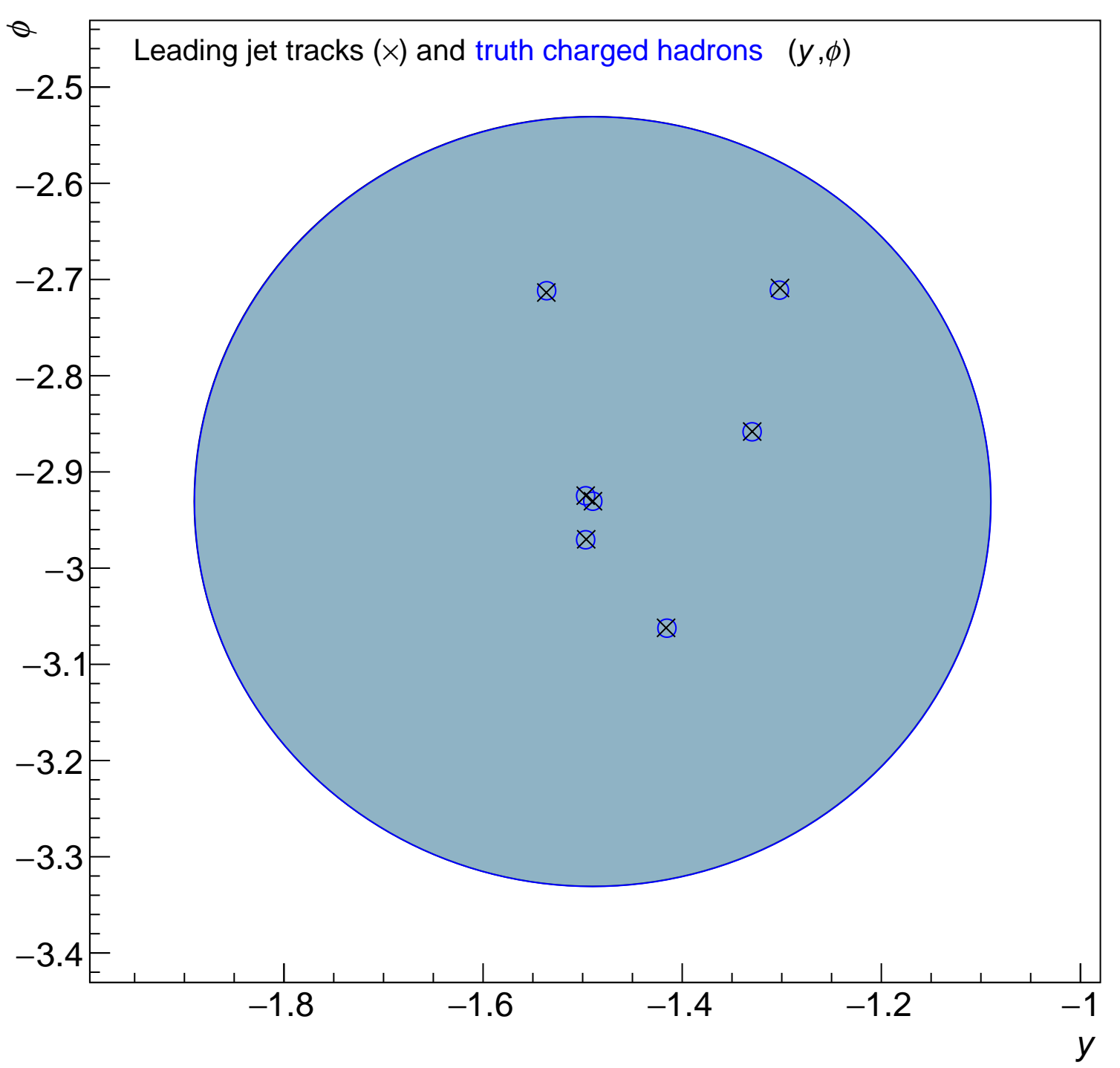
(0.7, 2.27, 0.54)

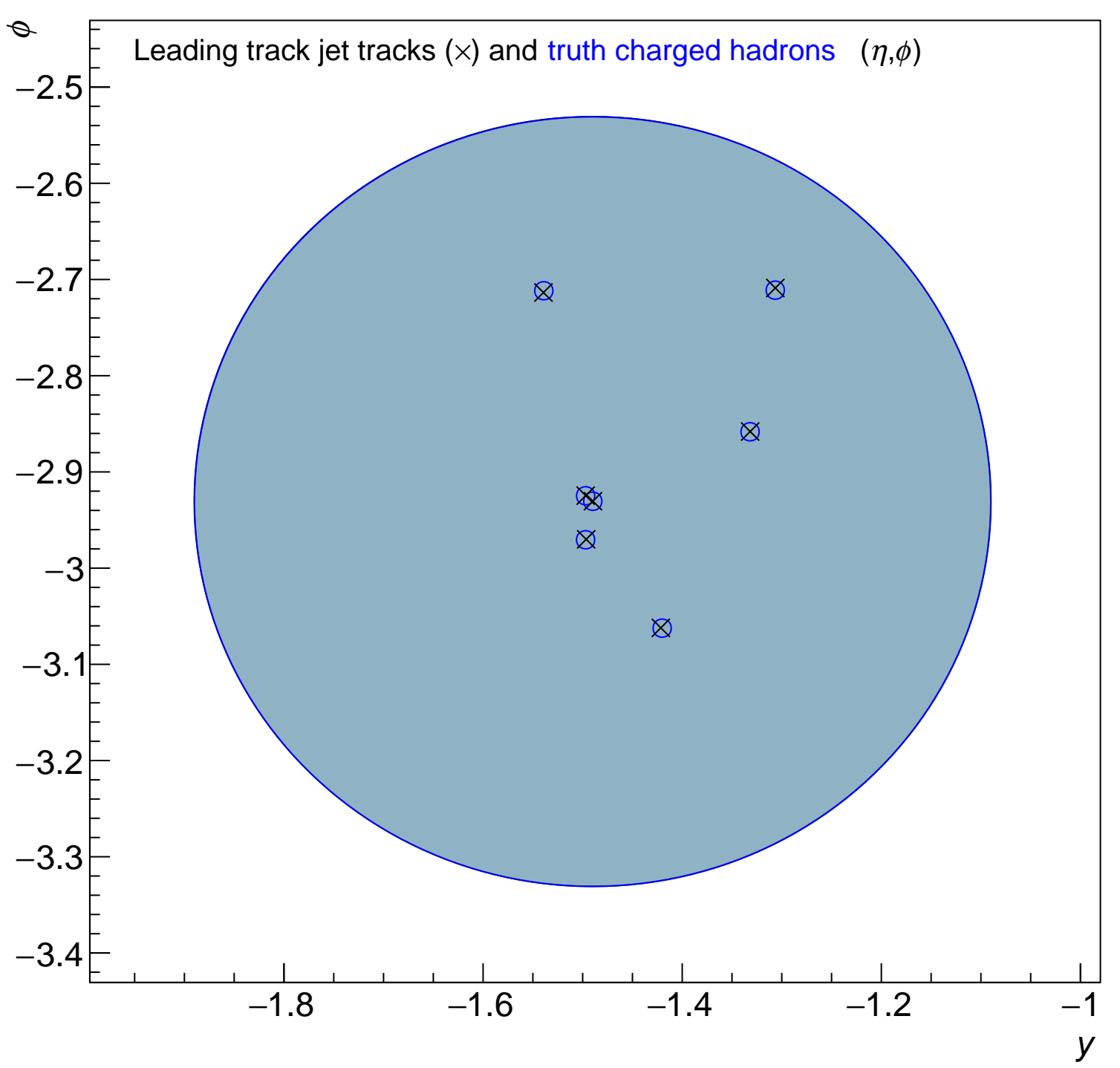
(0.6, 0.70, -1.73)

(0.6, -2.13, -2.10)









Run 300000, Event 689576880, $\mu = 28.5$, $N_{\text{PV}} = 15$

Truth ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (89.9, 216.6, -0.01)

Reco ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (85.0, 199.0, 0.00)

$\Delta\phi(\text{ll}, j1) = 3.12$, $\Delta R_{j1}^{\text{tru-rec}} = 0.00$

2 truth muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(171.2, -0.23, 0.16)

(45.7, 0.74, 0.28)

2 reco muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(153.9, -0.23, 0.16)

(45.3, 0.74, 0.28)

42 truth jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(199.7, -1.49, -2.93)

(13.3, -0.86, 0.51)

(3.9, -2.04, 1.12)

(3.4, -1.33, 1.81)

(2.7, -2.02, 2.41)

(2.6, 1.05, -0.37)

(2.5, 2.16, -1.84)

(2.3, 1.82, -0.68)

(2.2, -1.86, 1.74)

(2.1, -0.72, -2.68)

(1.6, -1.98, 0.54)

(1.5, -1.38, 0.73)

(1.3, -4.57, 2.46)

(1.3, 1.45, 1.71)

(1.3, 5.43, 0.64)

(1.2, -1.09, -0.55)

(1.2, -4.57, -1.59)

(1.2, 3.87, -2.27)

(1.0, 0.68, 2.35)

(1.0, 4.83, 1.25)

(1.0, 2.34, -2.42)

(0.9, -3.35, -2.01)

(0.8, 0.93, -0.81)

(0.8, 7.09, 2.82)

(0.8, -8.04, -2.06)

(0.8, -1.80, -1.91)

(0.8, 2.09, -0.34)

(0.7, -1.16, -2.26)

(0.7, -3.80, 0.58)

(0.7, 7.95, 2.47)

(0.7, -7.94, 0.42)

(0.7, -4.36, 2.95)

(0.6, -5.56, 1.07)

(0.6, 1.67, 2.82)

(0.6, 0.15, 2.17)

(0.6, -0.52, -0.15)

(0.5, -0.32, -0.91)

(0.5, -4.09, -0.71)

(0.5, -1.48, 0.02)

(0.5, -3.07, -0.86)

(0.5, -3.69, -1.17)

(0.5, 0.42, -0.34)

25 reco jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(205.1, -1.49, -2.93)

(13.9, -0.87, 0.52)

(3.9, -2.03, 1.12)

(3.4, -1.33, 1.80)

(2.7, 2.19, -1.84)

(2.6, 1.07, -0.37)

(2.4, -0.72, -2.68)

(2.3, 1.82, -0.67)

(2.1, -1.89, 1.74)

(2.0, -2.06, 2.48)

(1.7, 2.37, -2.42)

(1.6, -1.98, 0.54)

(1.5, -1.38, 0.74)

(1.3, 1.64, 1.72)

(1.2, -1.09, -0.55)

(1.1, -1.73, -0.63)

(1.0, 0.68, 2.35)

(0.8, 2.08, -0.35)

(0.8, 0.93, -0.81)

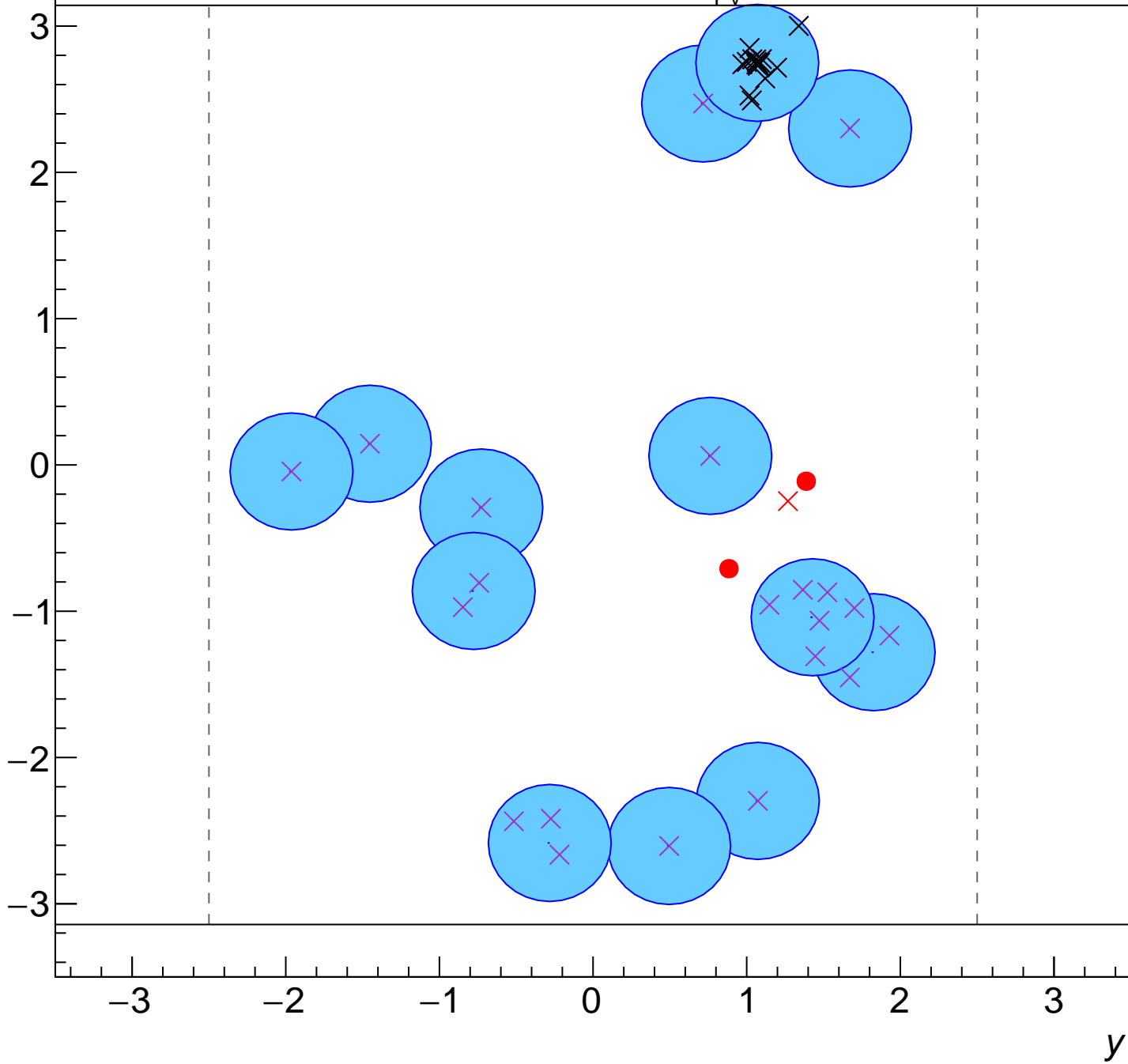
(0.7, -1.15, -2.27)

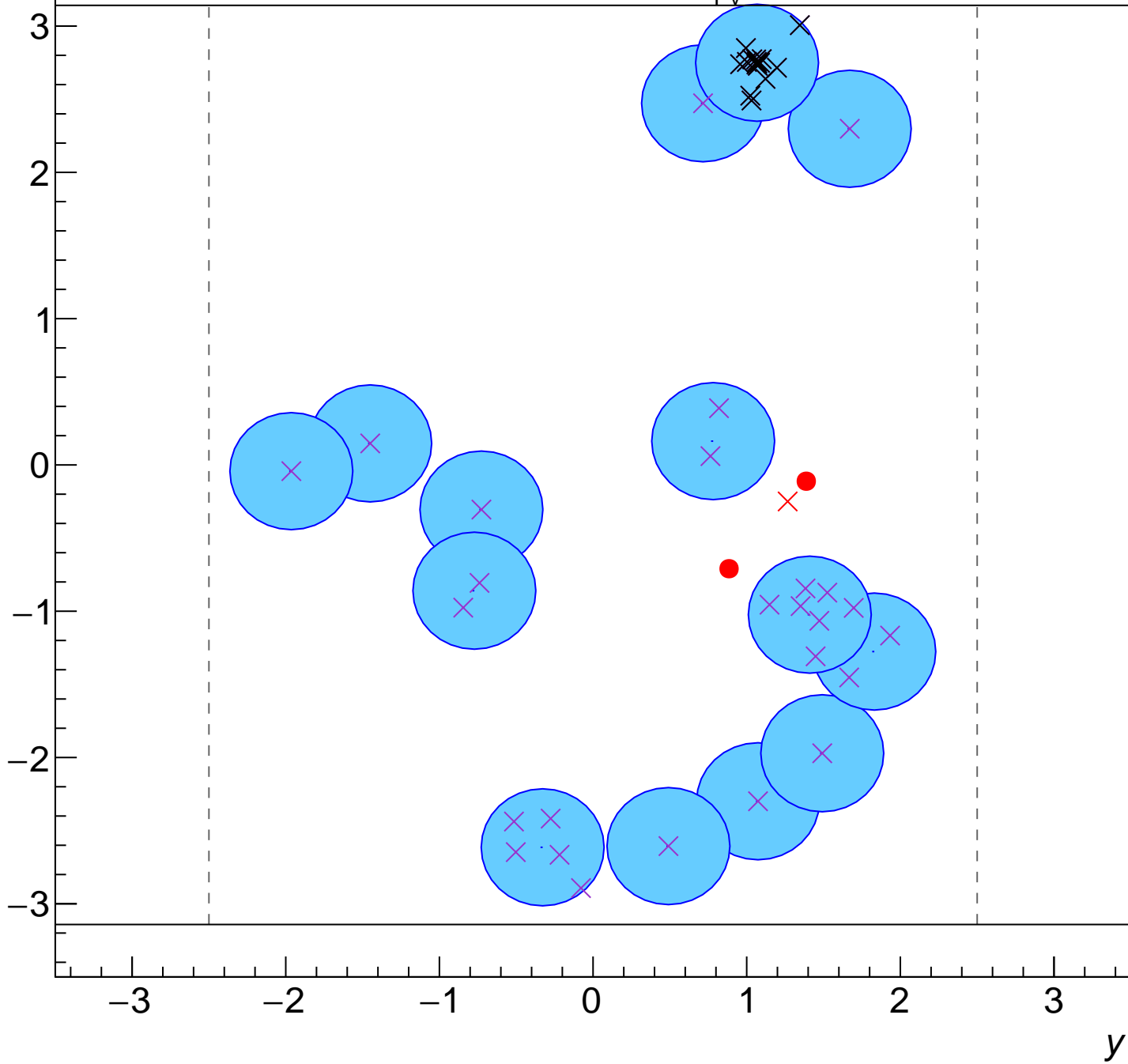
(0.7, -1.80, -1.91)

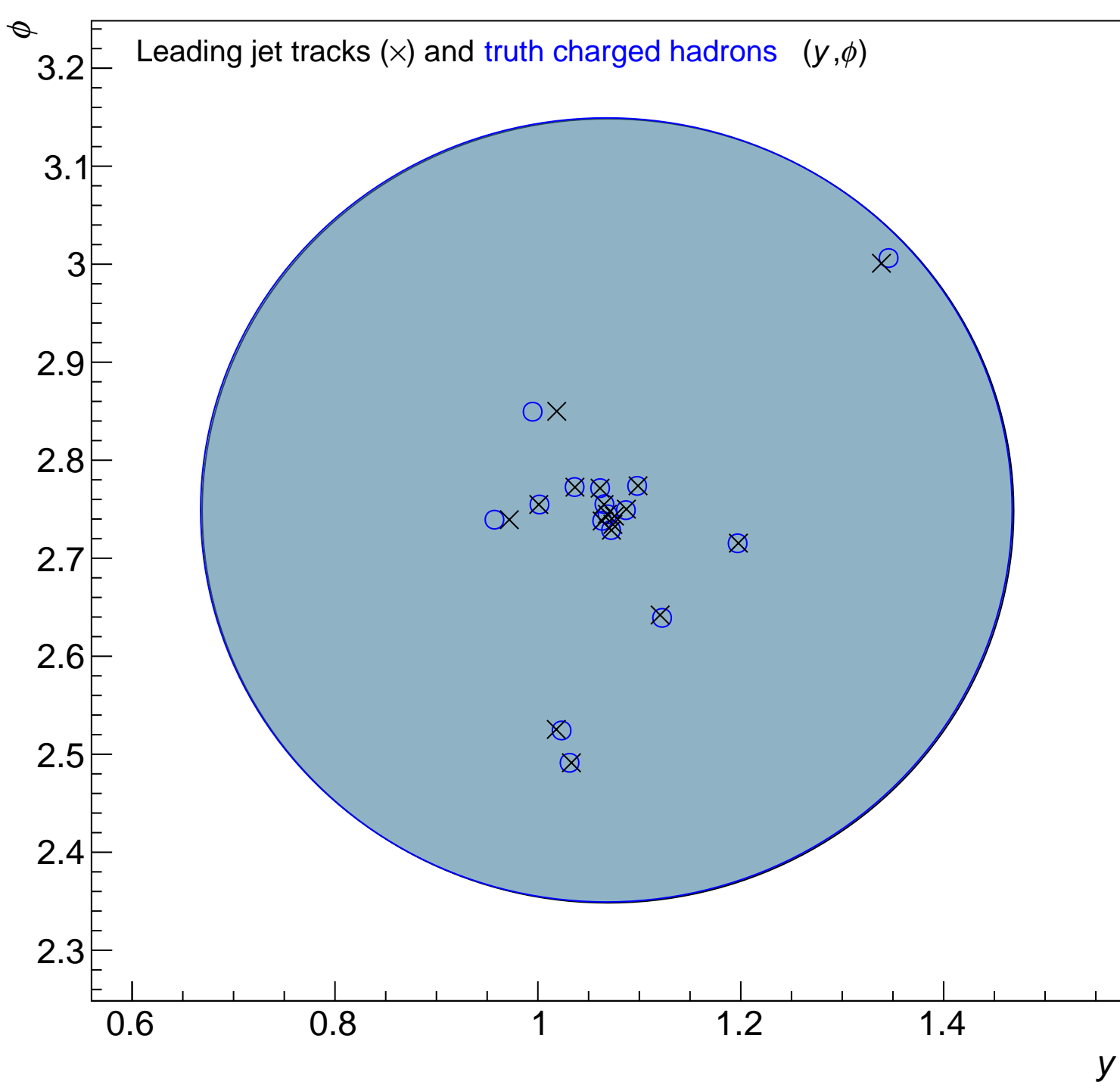
(0.6, 1.67, 2.82)

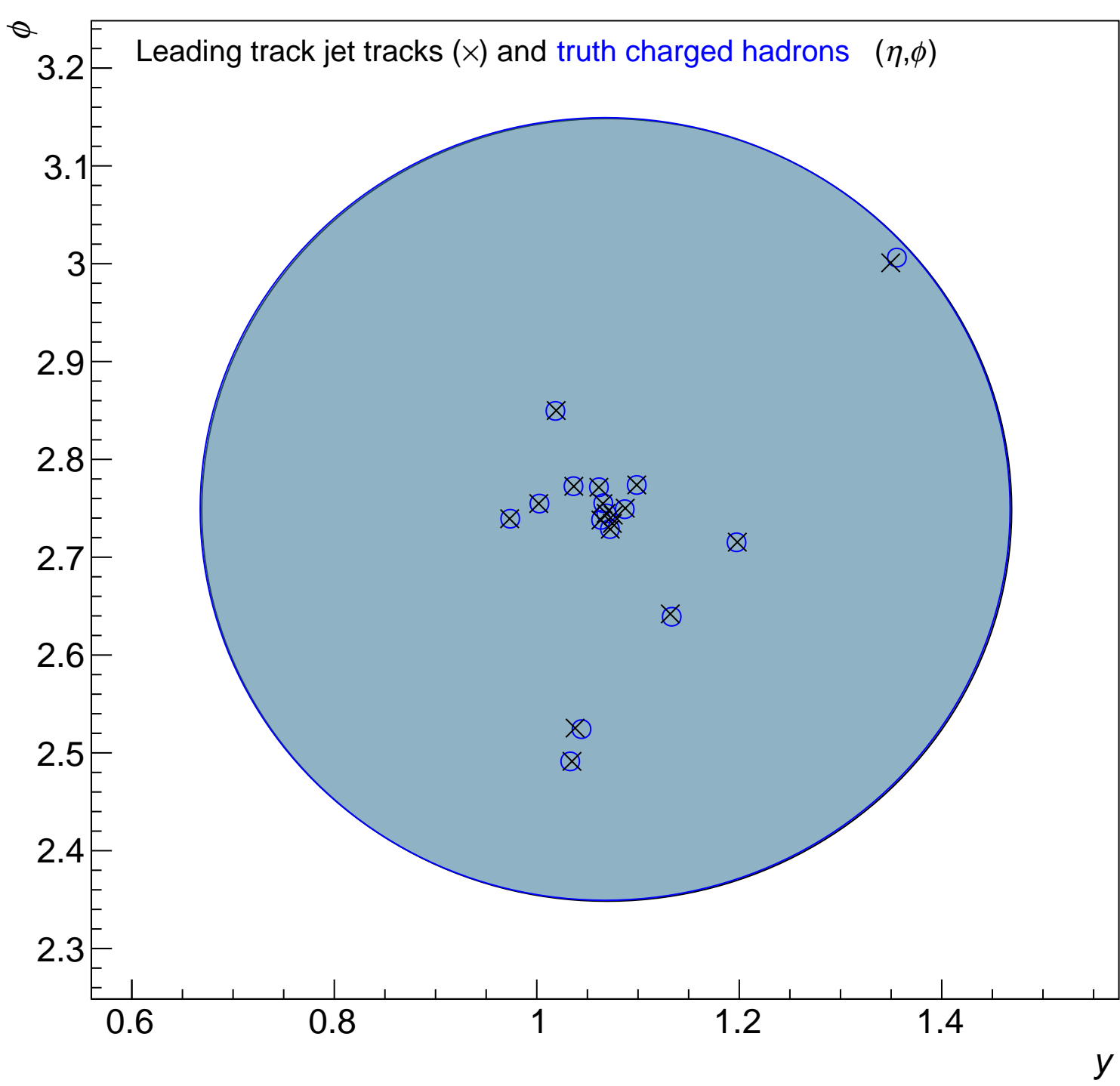
(0.6, 2.02, 1.32)

(0.6, -0.53, -0.14)

ϕ Run 300000, Event 689585876, $\mu = 20.5$, $N_{\text{PV}} = 12$, **reconstructed level**

ϕ Run 300000, Event 689585876, $\mu = 20.5$, $N_{\text{PV}} = 12$, **particle level**





Run 300000, Event 689585876, $\mu = 20.5$, $N_{\text{PV}} = 12$

Truth ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (90.5, 264.9, 1.27)

Reco ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (88.1, 259.2, 1.27)

$\Delta\phi(\text{ll}, j1) = -3.00$, $\Delta R_{j1}^{\text{tru-rec}} = 0.00$

2 truth muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(208.8, 1.39, -0.11)

(64.9, 0.89, -0.71)

2 reco muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(205.1, 1.39, -0.11)

(62.5, 0.88, -0.71)

23 truth jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(192.5, 1.07, 2.75)

(16.2, 1.41, -1.02)

(14.9, -0.33, -2.61)

(5.4, -0.77, -0.86)

(2.2, -1.96, -0.04)

(1.9, 1.83, -1.28)

(1.6, -1.45, 0.15)

(1.6, 0.78, 0.16)

(1.3, 1.67, 2.30)

(1.2, 0.49, -2.61)

(1.1, 0.72, 2.47)

(1.1, 1.49, -1.97)

(1.0, 2.84, 0.30)

(0.9, -6.04, -1.66)

(0.8, 1.07, -2.30)

(0.8, -2.58, -1.47)

(0.7, -0.73, -0.31)

(0.6, -2.74, -0.33)

(0.6, 7.73, -2.33)

(0.6, 4.74, -1.25)

(0.5, -3.52, -1.40)

(0.5, -8.43, 0.38)

(0.5, 5.19, -2.34)

13 reco jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(211.3, 1.07, 2.75)

(12.6, 1.43, -1.04)

(10.6, -0.28, -2.58)

(5.3, -0.78, -0.86)

(2.1, -1.96, -0.04)

(1.9, 1.83, -1.28)

(1.6, -1.45, 0.14)

(1.4, 1.67, 2.30)

(1.3, 0.50, -2.60)

(1.1, 0.72, 2.47)

(1.1, 0.76, 0.06)

(0.8, 1.07, -2.30)

(0.7, -0.73, -0.29)

42 charged truth hadrons, $p_{\text{T}} > 0.5$, $|y| < 2.5$

(66.9, 1.06, 2.74)

(22.2, 1.07, 2.74)

39 tracks, first 4

(63.3, 1.06, 2.74), matched to \bar{p}

(23.2, 1.07, 2.74), matched to π^-

(20.4, 1.06, 2.77), matched to π^+

(19.9, 1.10, 2.77), matched to p

18 j1 tracks, ($p_{\text{T}}/\text{GeV}, y, \eta, \phi$)

(0.9, 1.34, 1.35, 3.00),

(2.1, 1.03, 1.03, 2.49),

(0.6, 1.02, 1.04, 2.53),

(4.4, 1.20, 1.20, 2.72),

(0.8, 1.12, 1.13, 2.64),

(3.6, 1.02, 1.02, 2.85),

(2.3, 0.97, 0.97, 2.74),

(2.7, 1.00, 1.00, 2.75),

(19.9, 1.10, 1.10, 2.77),

(15.4, 1.04, 1.04, 2.77),

(20.4, 1.06, 1.06, 2.77),

(8.5, 1.09, 1.09, 2.75),

(10.1, 1.07, 1.07, 2.75),

(11.2, 1.07, 1.07, 2.73),

(18.7, 1.08, 1.08, 2.74),

(3.4, 1.07, 1.07, 2.73),

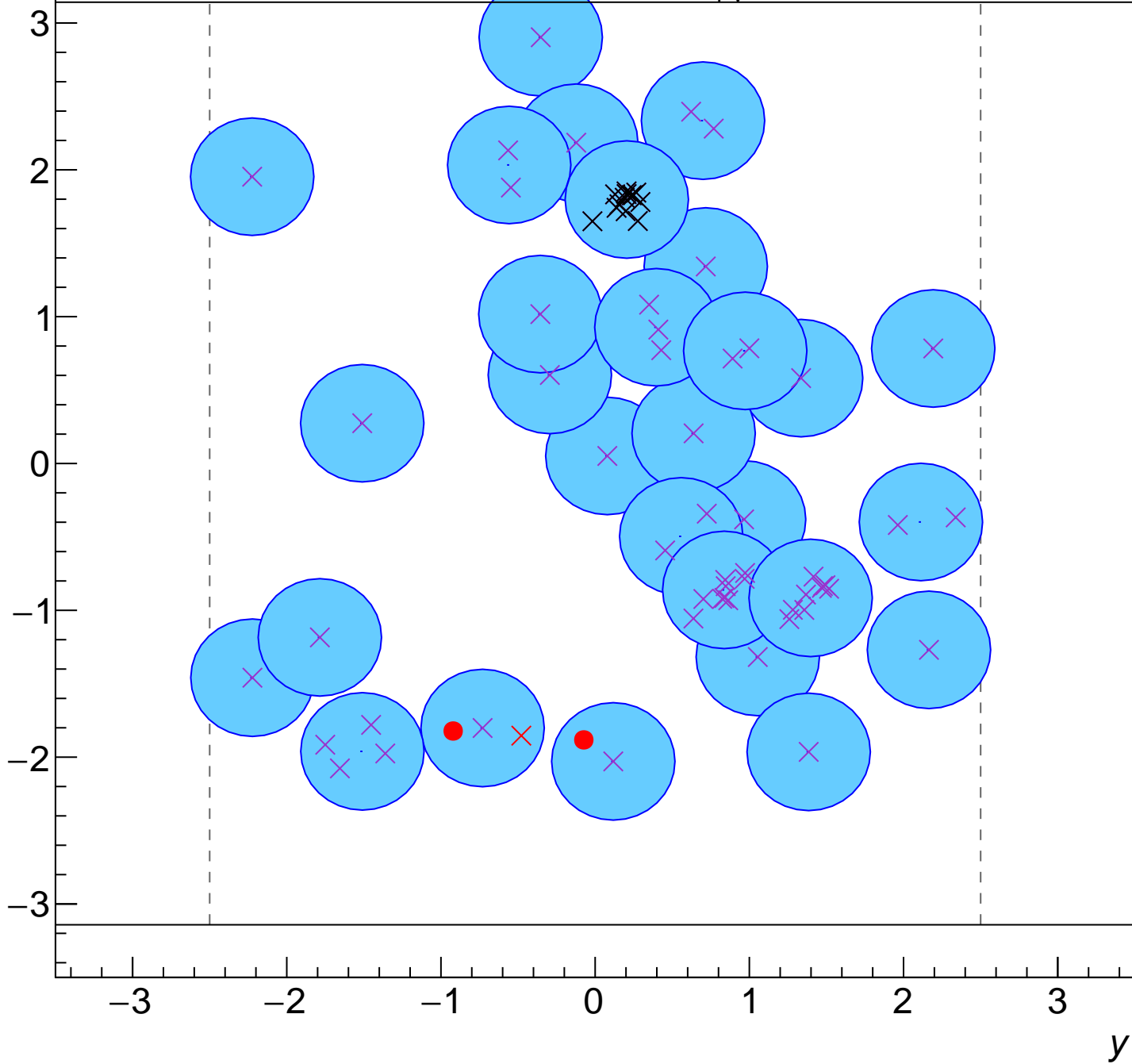
(63.3, 1.06, 1.06, 2.74),

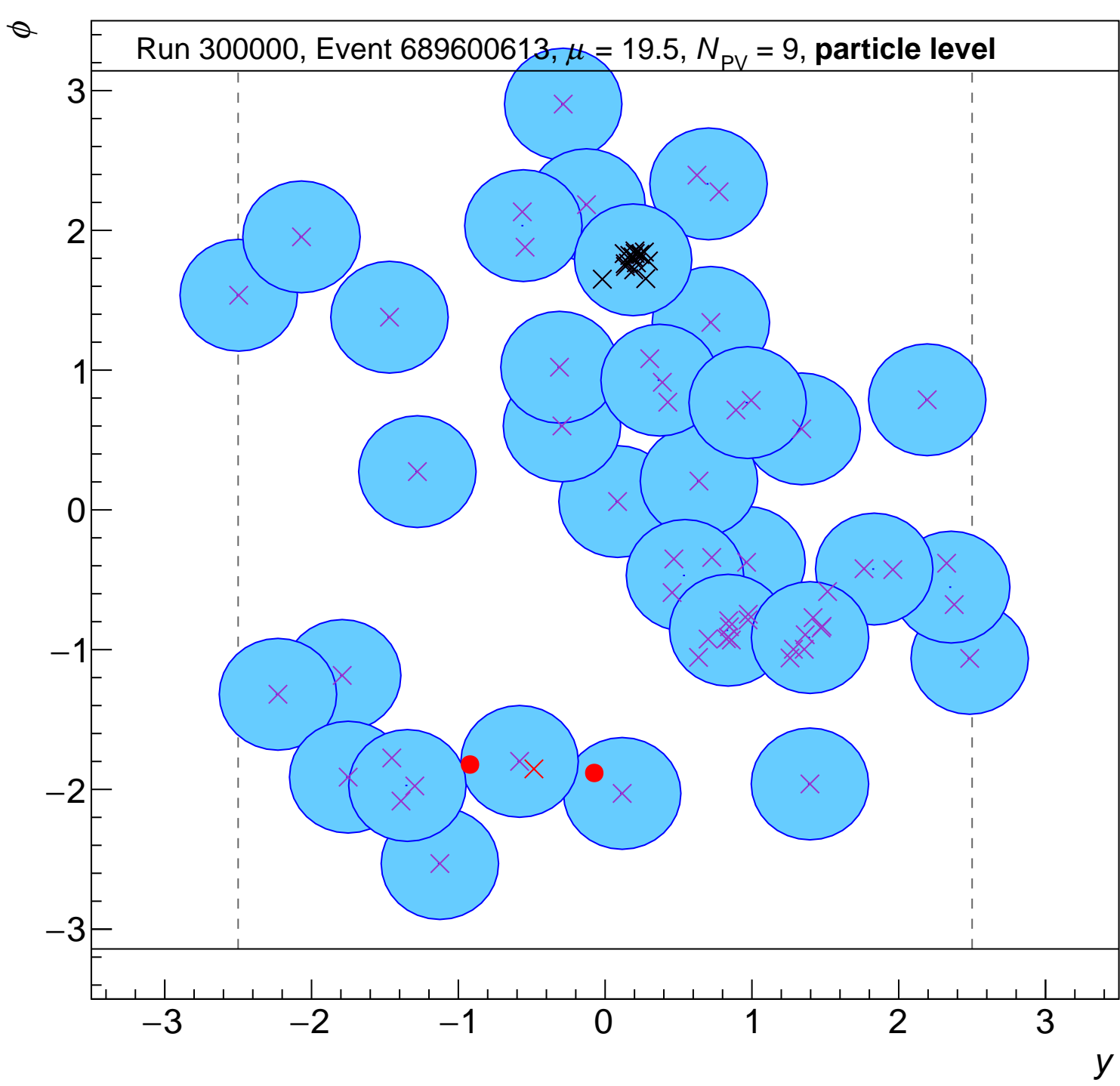
(23.2, 1.07, 1.07, 2.74),

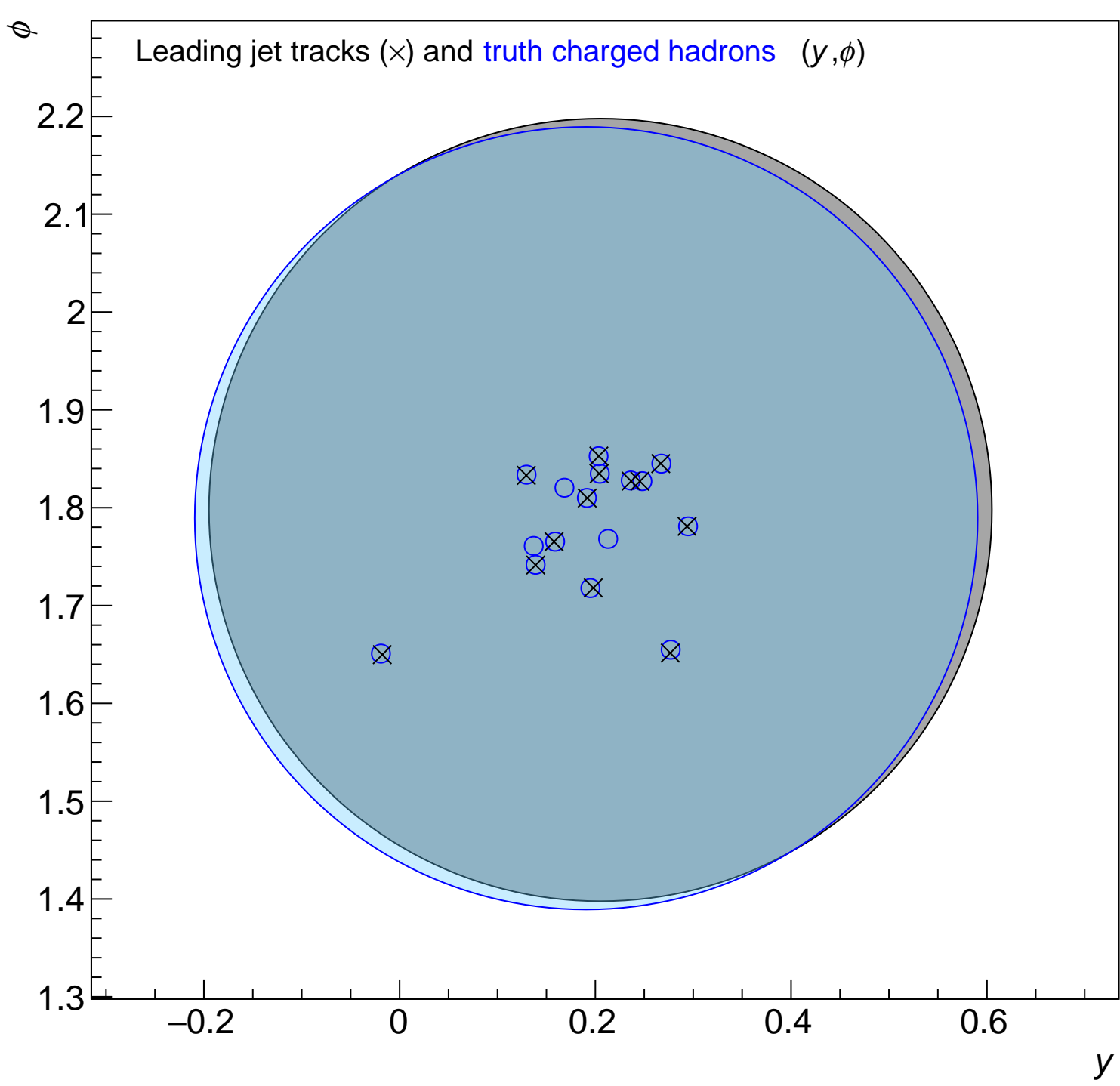
16 j1 charged hadrons, ($p_{\text{T}}/\text{GeV}, y, \eta, \phi$)

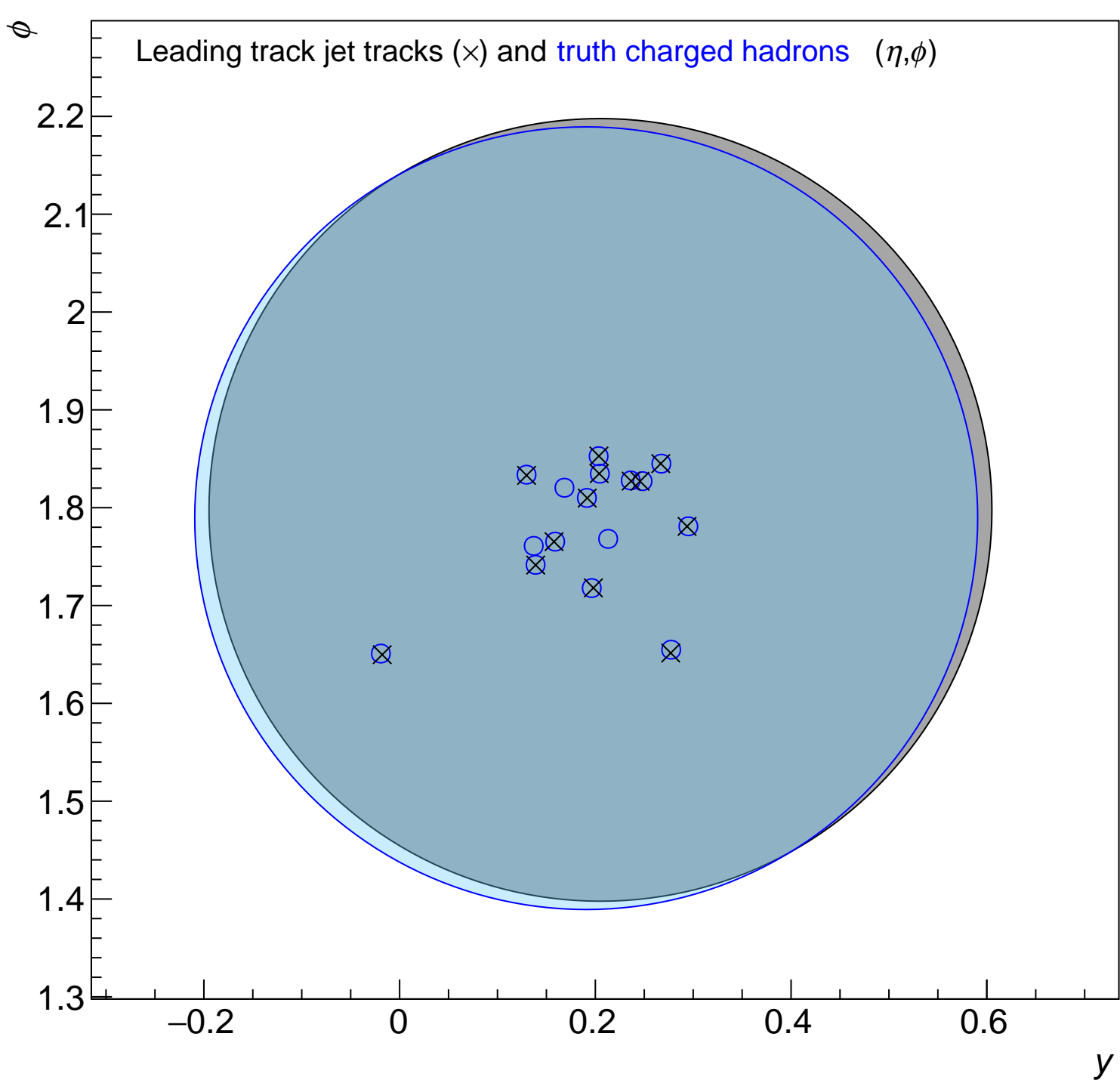
(0.9, 1.35, 1.36, 3.01), π^-

(2.1, 1.03, 1.03, 2.49), π^+

ϕ Run 300000, Event 689600613, $\mu = 19.5$, $N_{\text{PV}} = 9$, **reconstructed level**







Run 300000, Event 689600613, $\mu = 19.5$, $N_{\text{PV}} = 9$

Truth (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (90.2, 206.4, -0.49)

Reco (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (90.9, 207.9, -0.48)

$\Delta\phi(\text{ll}, j1) = 2.63$, $\Delta R_{j1}^{\text{tru-rec}} = 0.02$

2 truth muons, (p_{T} /GeV, y , ϕ)

(106.4, -0.07, -1.88)

(100.1, -0.92, -1.82)

2 reco muons, (p_{T} /GeV, y , ϕ)

(108.8, -0.07, -1.88)

(99.2, -0.92, -1.82)

65 truth jets, (p_{T} /GeV, y , ϕ)

(200.5, 0.19, 1.79)

(78.2, 1.40, -0.91)

(16.8, 0.84, -0.86)

(5.6, 0.97, 0.77)

(4.1, 2.19, 0.79)

(4.0, -1.35, -1.97)

(3.3, 1.83, -0.42)

(2.8, 0.54, -0.47)

(2.7, 0.37, 0.93)

(2.2, 0.64, 0.21)

(2.2, 3.30, -2.59)

(1.8, -4.68, -2.59)

(1.8, -0.56, 2.03)

(1.7, -4.42, 0.15)

(1.7, -3.85, -0.25)

(1.6, -5.66, 1.25)

(1.6, 3.30, -3.12)

(1.5, -2.07, 1.95)

(1.4, -0.13, 2.18)

(1.4, 2.36, -0.55)

(1.3, 6.64, -0.75)

(1.3, 6.75, -0.09)

(1.2, -2.63, -1.73)

(1.2, 7.48, 2.55)

(1.2, -0.29, 2.90)

(1.2, 0.70, 2.33)

(1.2, 2.78, -2.17)

(1.1, -1.47, 1.38)

(1.1, -2.50, 1.54)

(1.1, -1.28, 0.27)

(1.1, -0.58, -1.80)

(1.1, -2.72, -0.58)

(1.1, -1.75, -1.91)

(1.0, -4.85, 0.32)

(0.9, 0.96, -0.37)

(0.9, 1.34, 0.58)

(0.9, -4.08, -2.46)

(0.9, -2.78, 2.91)

(0.8, -0.31, 1.02)

(0.8, 0.72, 1.34)

(0.8, -5.82, 2.72)

(0.8, -4.27, 1.54)

(0.7, 6.57, -2.77)

(0.7, -1.13, -2.53)

(0.7, -2.23, -1.32)

(0.7, -6.76, 2.00)

(0.7, -3.93, -2.06)

(0.7, 1.40, -1.96)

(0.7, 2.74, 0.03)

(0.6, -5.03, -1.37)

(0.6, 7.22, -2.21)

(0.6, -0.29, 0.60)

(0.6, 4.29, -0.01)

(0.6, -6.44, 1.48)

(0.6, -1.79, -1.18)

(0.6, 4.87, -0.54)

(0.6, 4.25, -1.32)

(0.6, 2.48, -1.06)

(0.6, 6.76, -2.10)

(0.6, -3.14, -2.39)

(0.6, 4.03, 0.42)

(0.5, 0.12, -2.03)

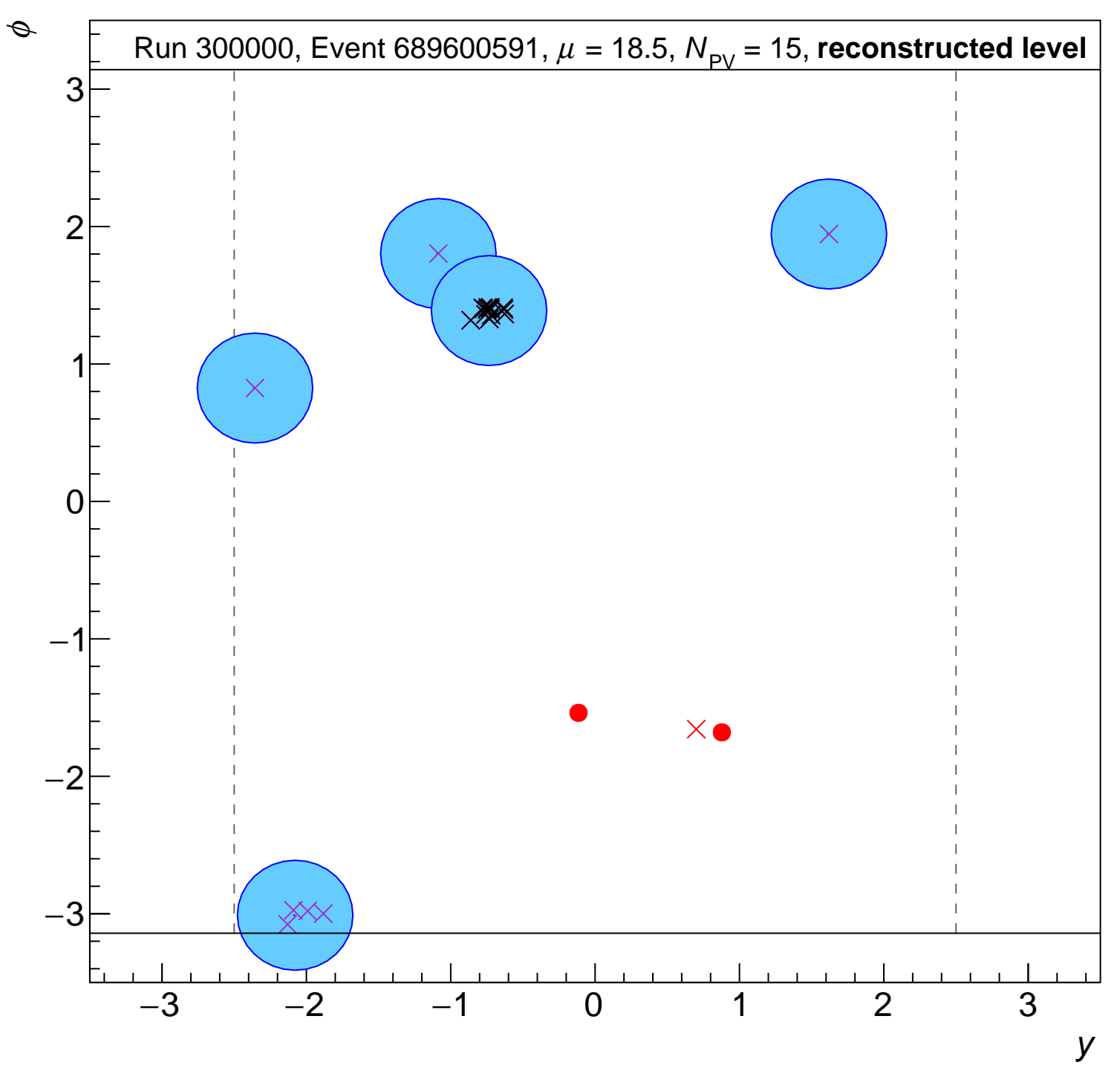
(0.5, 5.20, -2.07)

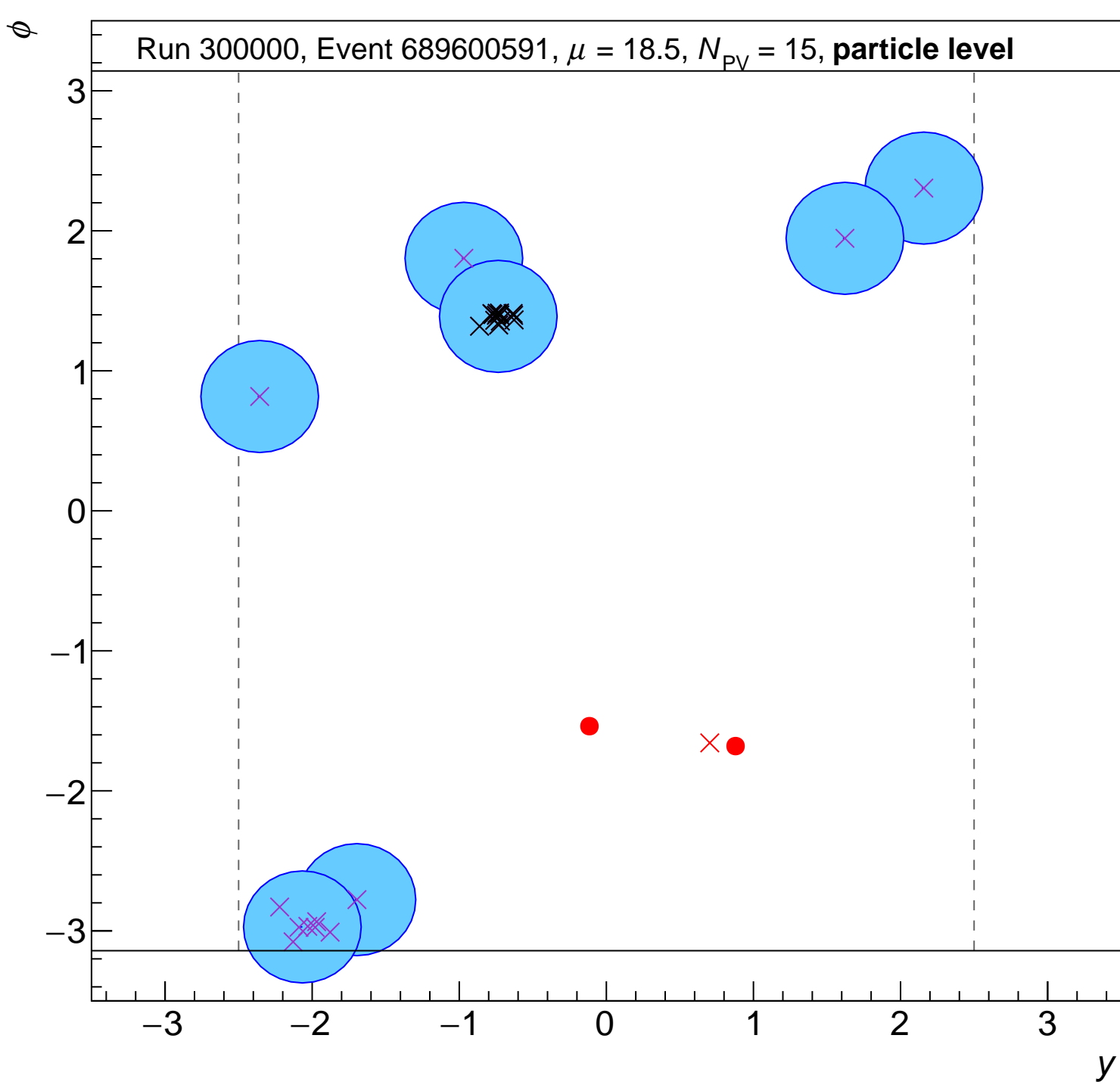
(0.5, 0.08, 0.06)

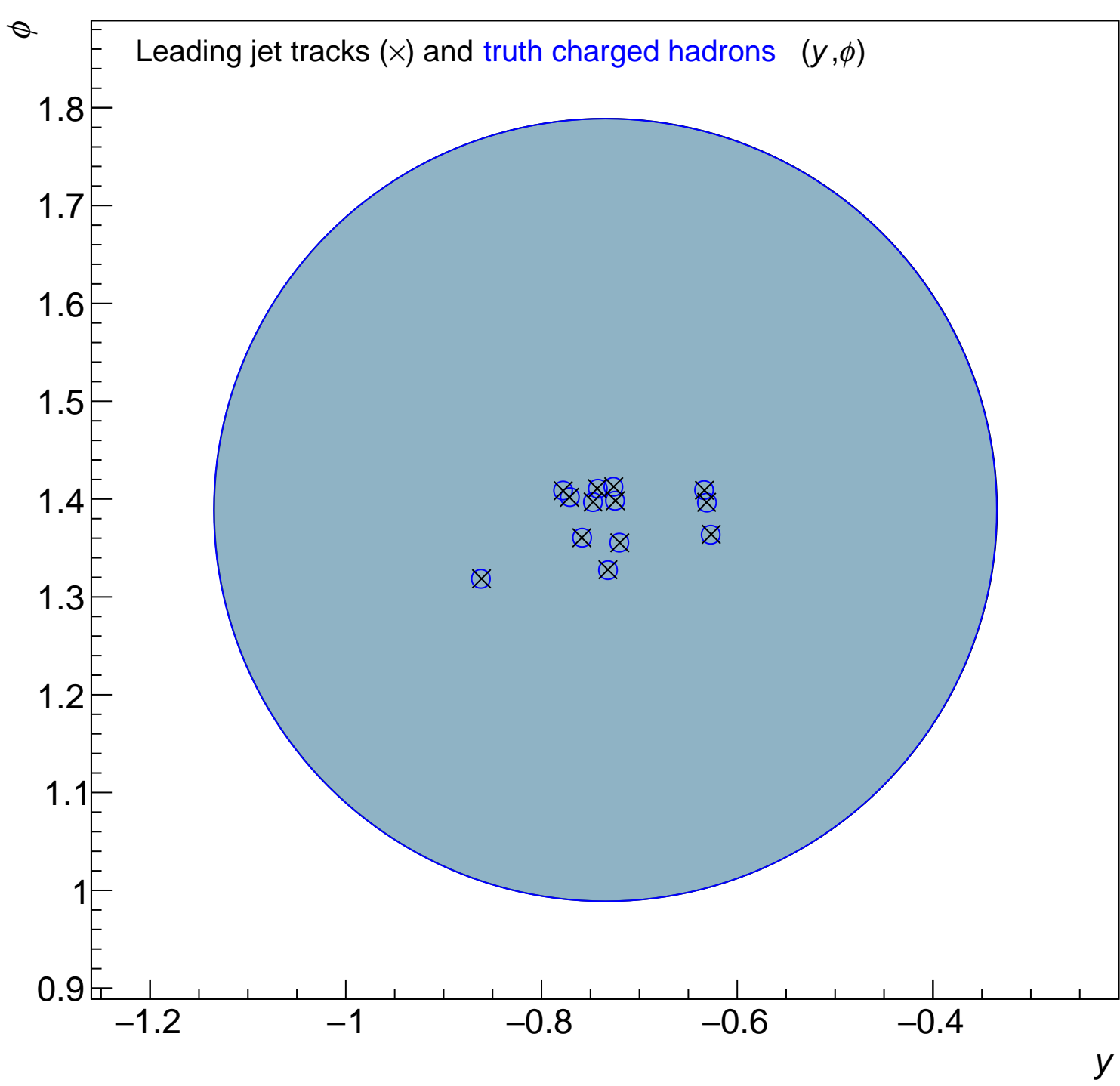
(0.5, 3.13, 2.75)

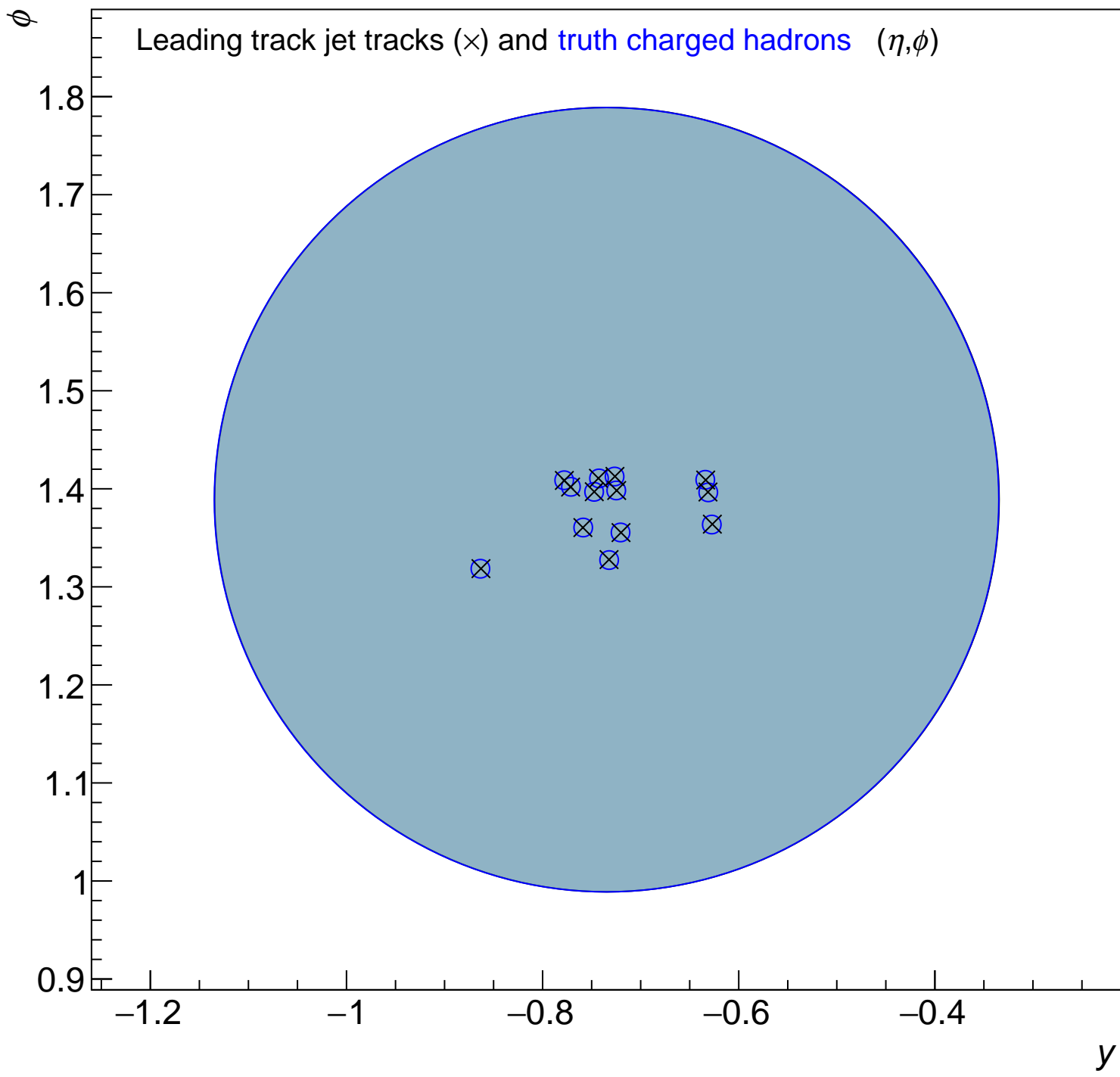
29 reco jets, (p_{T} /GeV, y , ϕ)

(1.1, -0.21, -1.80)









Run 300000, Event 689600591, $\mu = 18.5$, $N_{\text{PV}} = 15$

Truth ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (90.2, 234.2, 0.70)

Reco ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (84.3, 217.8, 0.70)

$\Delta\phi(\text{ll}, j1) = -3.05$, $\Delta R_{j1}^{\text{tru-rec}} = 0.00$

2 truth muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(196.5, 0.88, -1.68)

(38.0, -0.11, -1.54)

2 reco muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(182.4, 0.88, -1.68)

(35.7, -0.12, -1.54)

16 truth jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(171.4, -0.73, 1.39)

(15.3, -2.07, -2.97)

(1.4, 1.62, 1.95)

(1.2, -5.51, 2.52)

(0.9, -3.85, -2.50)

(0.9, -2.36, 0.82)

(0.8, 5.78, 0.98)

(0.8, -0.97, 1.80)

(0.8, 2.16, 2.30)

(0.7, -2.83, 2.53)

(0.6, 4.27, -2.22)

(0.6, -3.90, 2.83)

(0.6, -5.46, -0.11)

(0.5, -1.70, -2.78)

(0.5, -5.43, 2.01)

(0.5, 8.29, 1.91)

5 reco jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(170.7, -0.73, 1.39)

(7.5, -2.08, -3.01)

(1.3, 1.62, 1.95)

(1.0, -2.36, 0.82)

(0.8, -1.09, 1.80)

25 charged truth hadrons, $p_{\text{T}} > 0.5$, $|y| < 2.5$

(37.3, -0.75, 1.40)

(21.4, -0.72, 1.36)

20 tracks, first 4

(38.1, -0.75, 1.40), matched to π^+

(21.0, -0.72, 1.36), matched to π^-

(17.8, -0.72, 1.40), matched to π^-

(15.0, -0.74, 1.41), matched to π^-

13 j1 tracks, ($p_{\text{T}}/\text{GeV}, y, \eta, \phi$)

(2.1, -0.86, -0.86, 1.32),

(3.8, -0.63, -0.63, 1.36),

(7.1, -0.63, -0.63, 1.40),

(5.1, -0.63, -0.63, 1.41),

(7.8, -0.73, -0.73, 1.33),

(21.0, -0.72, -0.72, 1.36),

(11.2, -0.76, -0.76, 1.36),

(15.0, -0.78, -0.78, 1.41),

(12.7, -0.77, -0.77, 1.40),

(14.1, -0.73, -0.73, 1.41),

(17.8, -0.72, -0.72, 1.40),

(38.1, -0.75, -0.75, 1.40),

(15.0, -0.74, -0.74, 1.41),

13 j1 charged hadrons, ($p_{\text{T}}/\text{GeV}, y, \eta, \phi$)

(2.1, -0.86, -0.86, 1.32), π^-

(3.8, -0.63, -0.63, 1.36), π^+

(6.9, -0.63, -0.63, 1.40), π^+

(4.9, -0.63, -0.63, 1.41), π^+

(8.0, -0.73, -0.73, 1.33), π^+

(21.4, -0.72, -0.72, 1.36), π^-

(10.9, -0.76, -0.76, 1.36), π^+

(15.4, -0.78, -0.78, 1.41), π^-

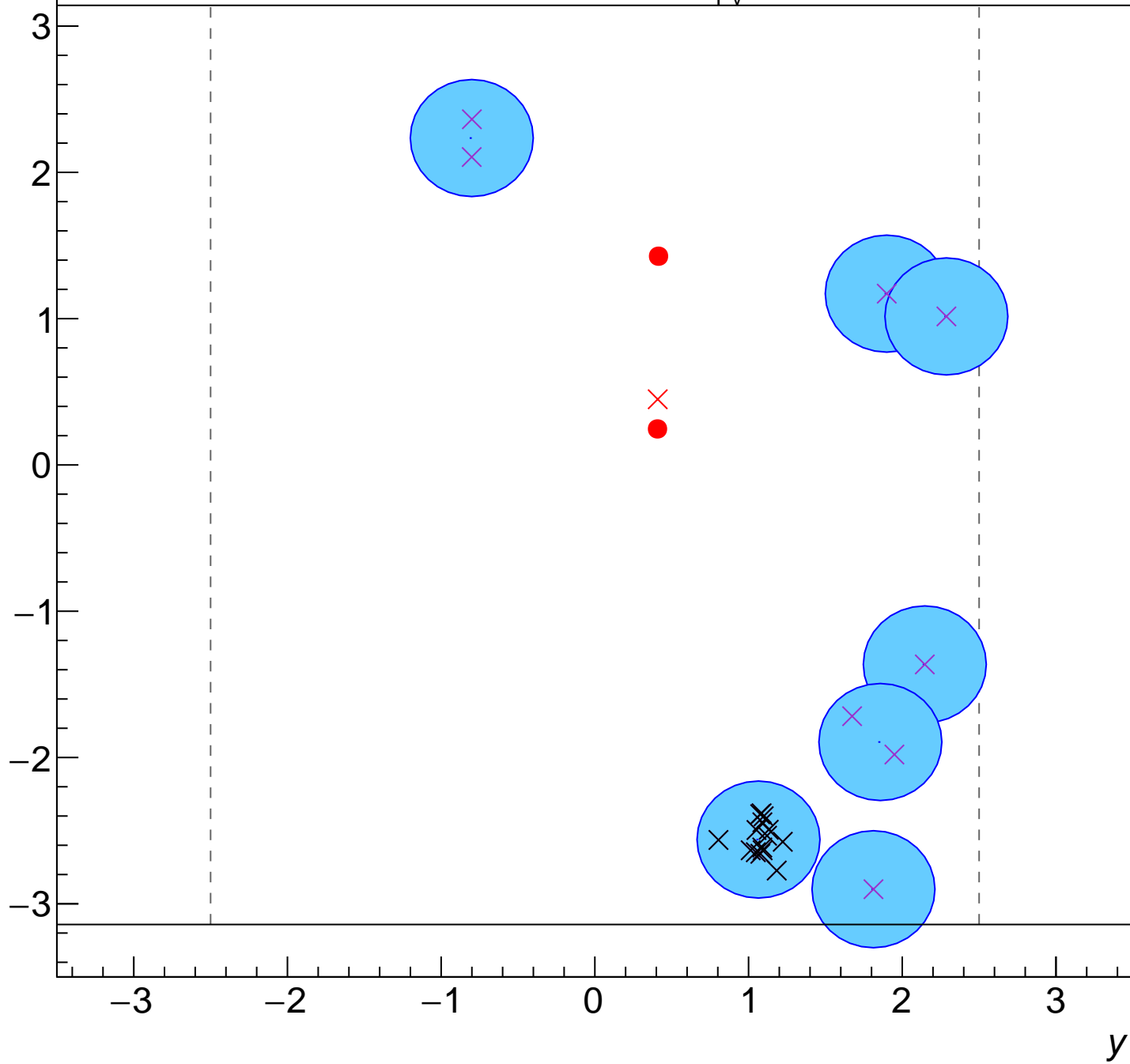
(12.8, -0.77, -0.77, 1.40), π^-

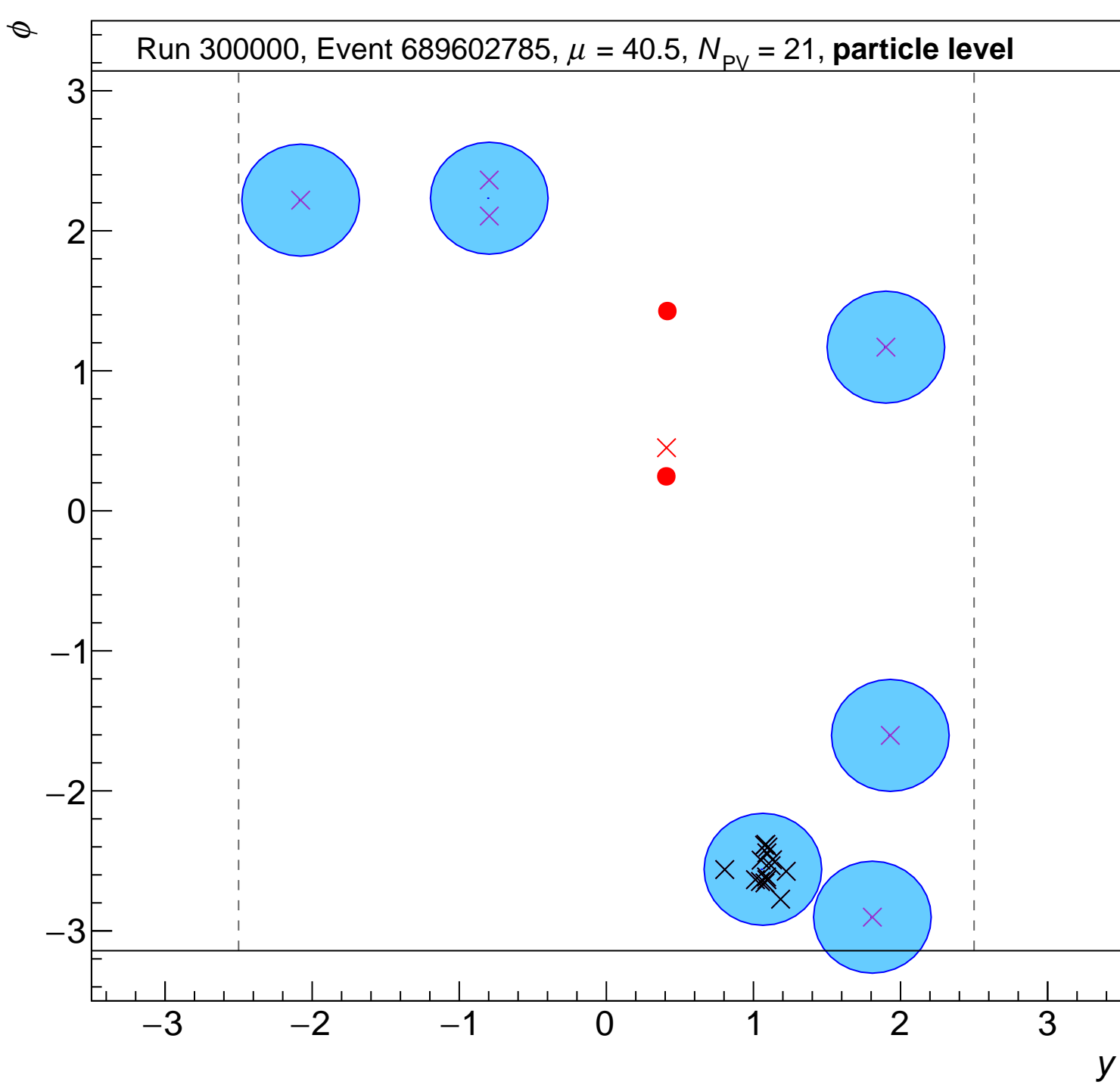
(14.2, -0.73, -0.73, 1.41), π^-

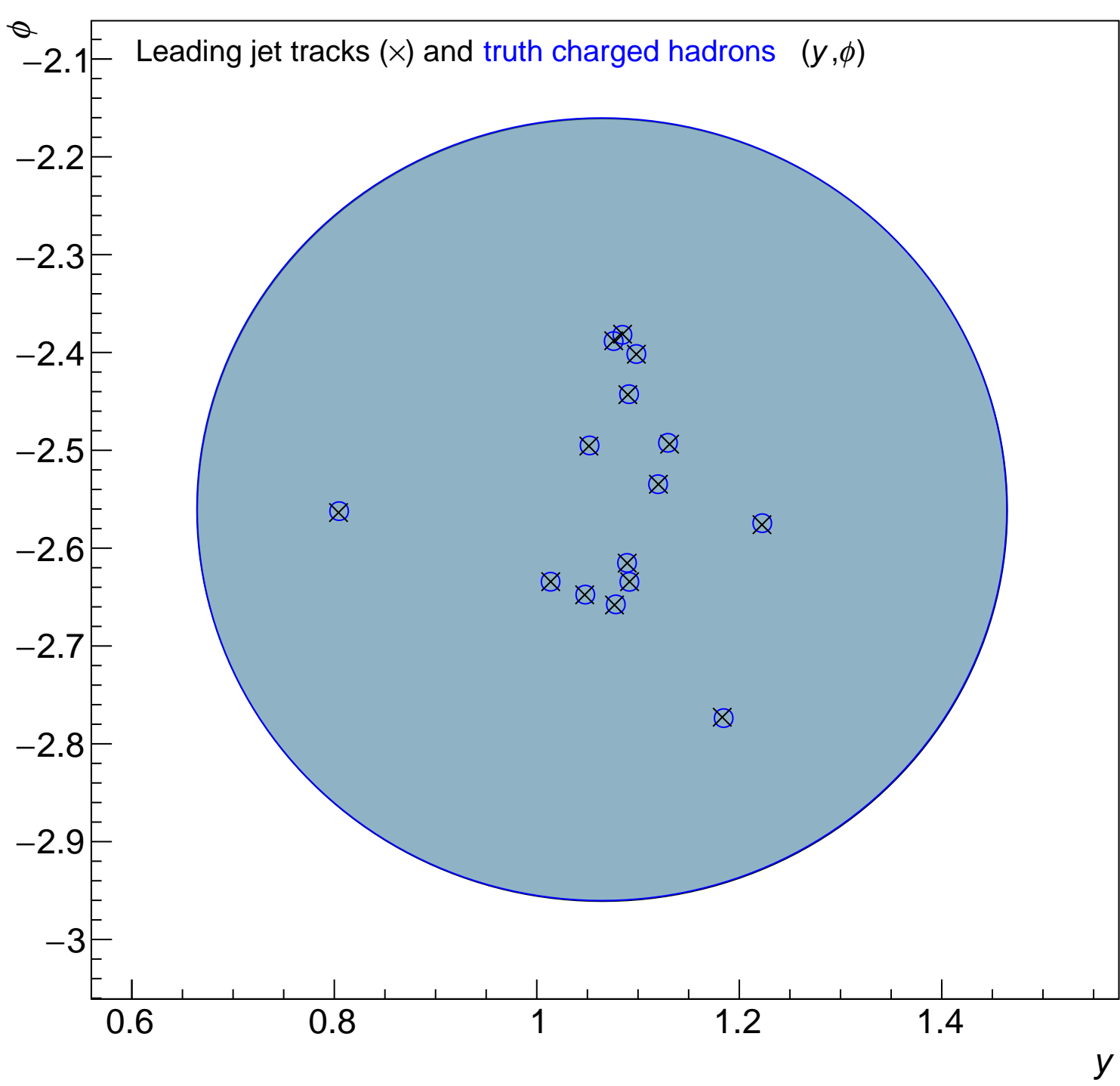
(18.1, -0.72, -0.72, 1.40), π^-

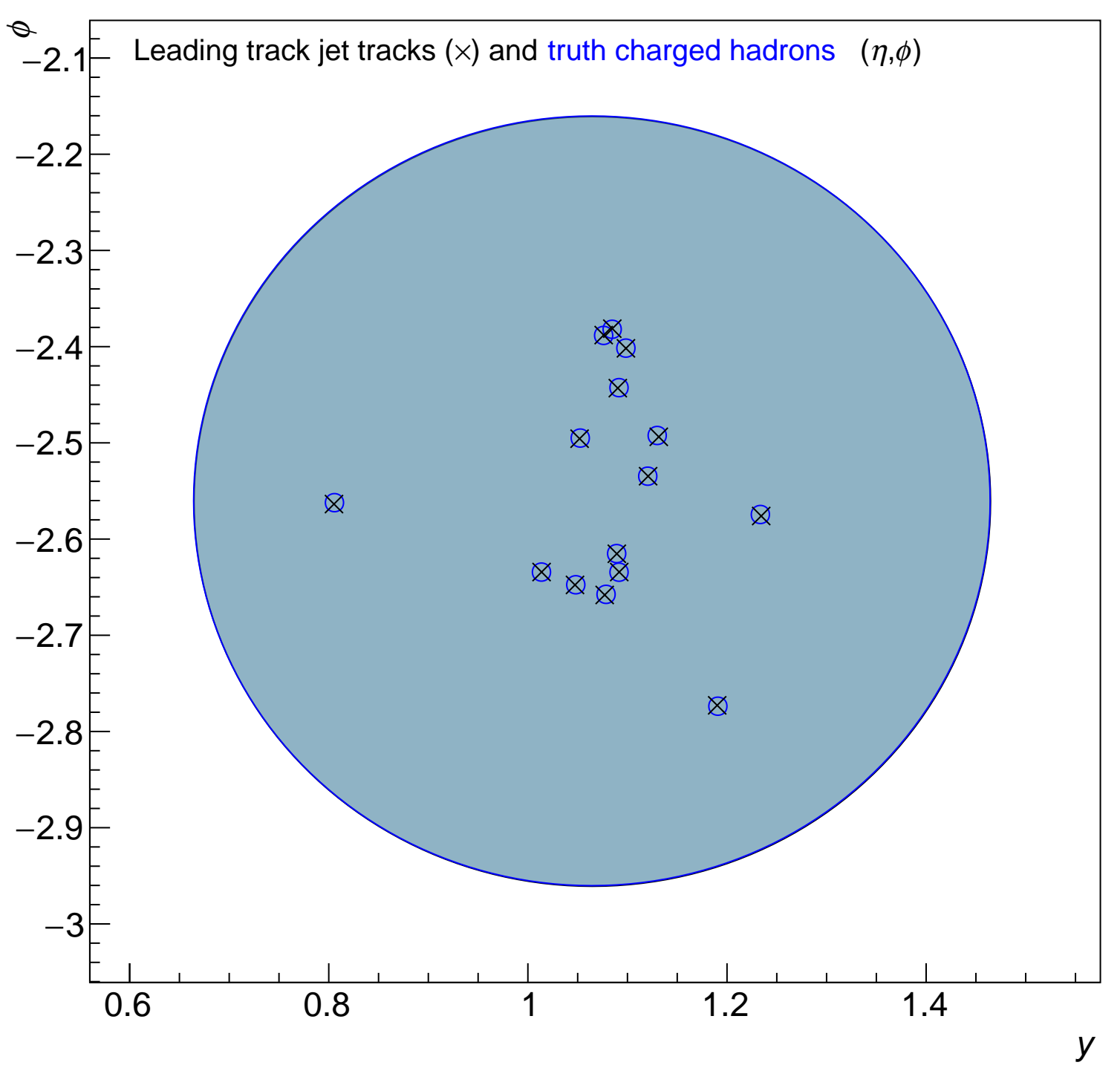
(37.3, -0.75, -0.75, 1.40), π^+

(15.4, -0.74, -0.74, 1.41), π^-

ϕ Run 300000, Event 689602785, $\mu = 40.5$, $N_{\text{PV}} = 21$, **reconstructed level**







Run 300000, Event 689602785, $\mu = 40.5$, $N_{\text{PV}} = 21$

Truth ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (89.1, 180.5, 0.41)

Reco ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (85.8, 174.4, 0.41)

$\Delta\phi(\text{ll}, j1) = 3.01$, $\Delta R_{j1}^{\text{tru-rec}} = 0.00$

2 truth muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(161.6, 0.41, 0.25)

(39.6, 0.41, 1.43)

2 reco muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(156.4, 0.41, 0.25)

(38.0, 0.41, 1.43)

16 truth jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(126.8, 1.06, -2.56)

(16.5, 4.88, 1.84)

(2.5, -0.80, 2.23)

(1.8, 4.43, 1.78)

(0.9, 1.90, 1.17)

(0.8, 7.88, -2.67)

(0.8, -8.39, -0.81)

(0.6, 1.93, -1.60)

(0.6, -7.16, -2.00)

(0.6, 1.81, -2.90)

(0.6, -2.85, 0.54)

(0.6, 5.34, -2.20)

(0.6, -2.08, 2.22)

(0.5, 3.67, 1.62)

(0.5, 6.12, 2.07)

(0.5, 3.21, -2.95)

7 reco jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(127.4, 1.06, -2.56)

(2.5, -0.80, 2.23)

(2.1, 1.86, -1.89)

(1.4, 2.29, 1.02)

(1.0, 1.90, 1.17)

(1.0, 2.15, -1.36)

(0.6, 1.81, -2.90)

21 charged truth hadrons, $p_{\text{T}} > 0.5$, $|y| < 2.5$

(24.1, 1.01, -2.63)

(22.2, 1.05, -2.65)

23 tracks, first 4

(23.4, 1.01, -2.63), matched to π^-

(23.0, 1.05, -2.65), matched to K^+

(18.1, 1.09, -2.62), matched to π^-

(12.2, 1.08, -2.38), matched to π^-

15 j1 tracks, ($p_{\text{T}}/\text{GeV}, y, \eta, \phi$)

(2.5, 0.80, 0.81, -2.56),

(4.6, 1.09, 1.09, -2.44),

(9.0, 1.10, 1.10, -2.40),

(12.2, 1.08, 1.08, -2.38),

(7.0, 1.08, 1.08, -2.39),

(1.1, 1.18, 1.19, -2.77),

(0.8, 1.22, 1.23, -2.58),

(5.1, 1.13, 1.13, -2.49),

(4.0, 1.05, 1.05, -2.50),

(3.6, 1.12, 1.12, -2.53),

(18.1, 1.09, 1.09, -2.62),

(9.3, 1.09, 1.09, -2.63),

(23.4, 1.01, 1.01, -2.63),

(23.0, 1.05, 1.05, -2.65),

(4.3, 1.08, 1.08, -2.66),

15 j1 charged hadrons, ($p_{\text{T}}/\text{GeV}, y, \eta, \phi$)

(2.6, 0.80, 0.81, -2.56), π^-

(4.5, 1.09, 1.09, -2.44), π^+

(8.9, 1.10, 1.10, -2.40), π^-

(12.2, 1.08, 1.08, -2.38), π^-

(7.3, 1.08, 1.08, -2.39), π^+

(1.1, 1.18, 1.19, -2.77), π^+

(0.9, 1.22, 1.23, -2.57), π^+

(5.0, 1.13, 1.13, -2.49), π^+

(4.0, 1.05, 1.05, -2.50), π^+

(3.7, 1.12, 1.12, -2.53), π^-

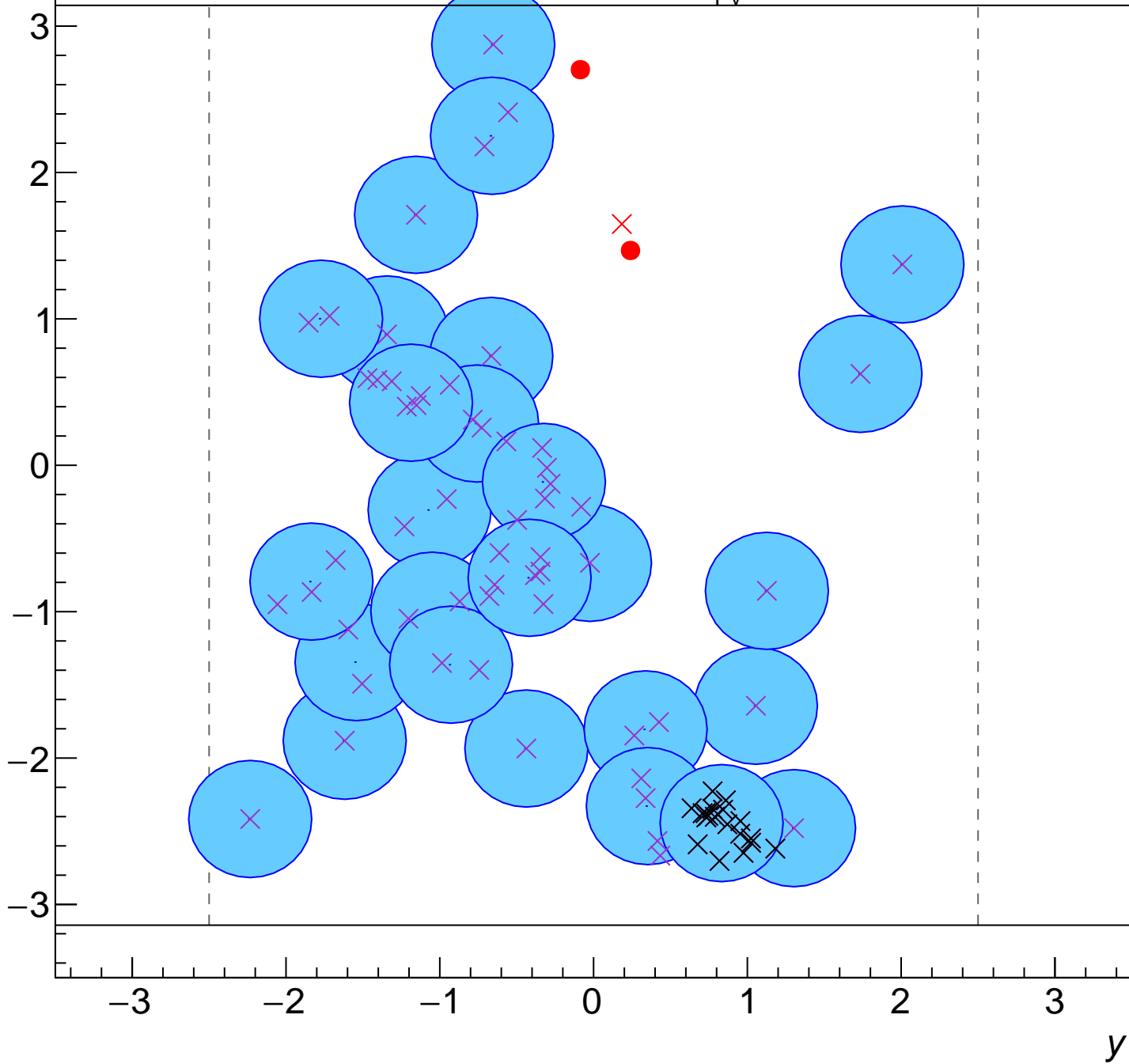
(24.1, 1.01, 1.01, -2.63), π^-

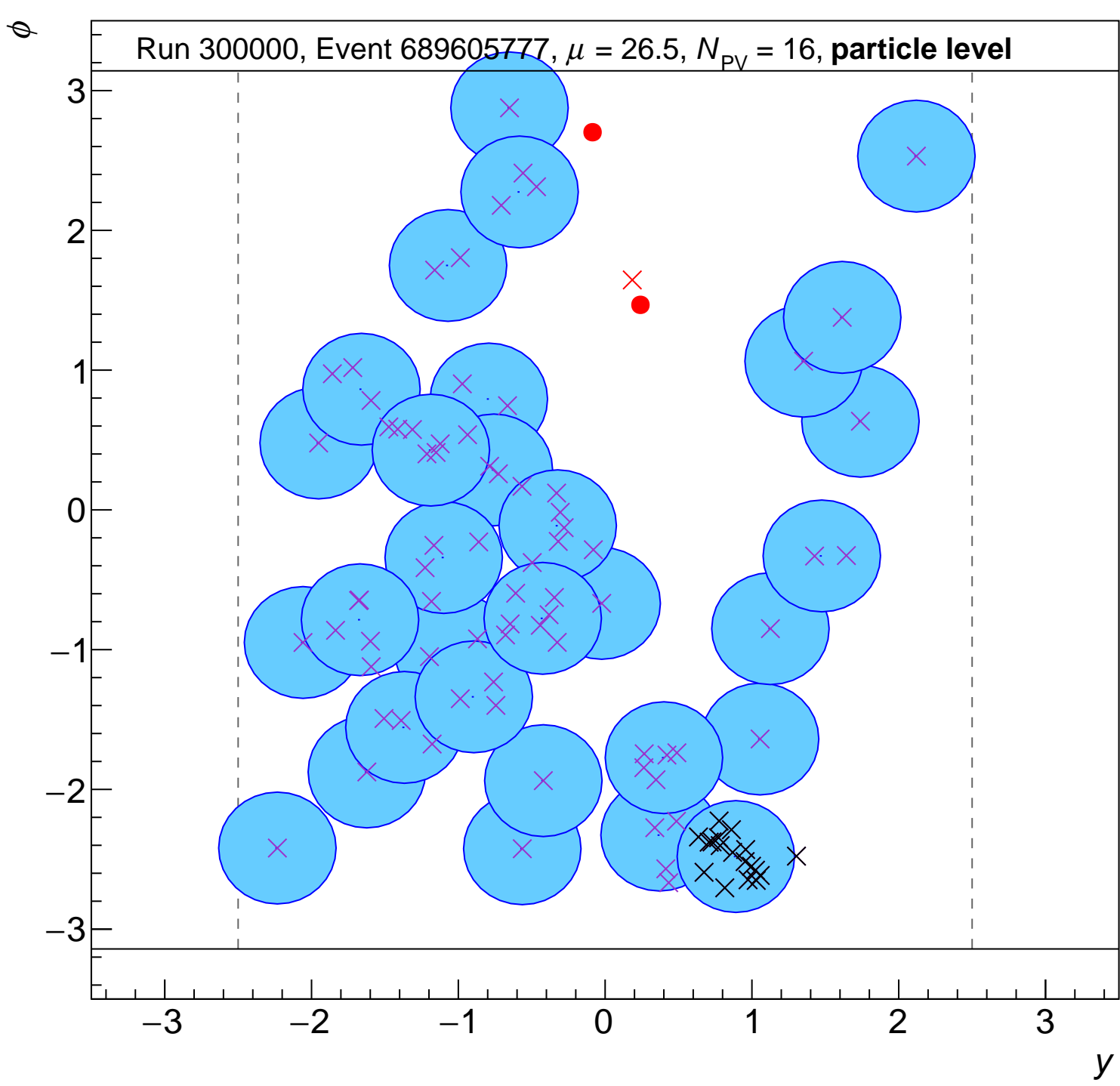
(22.2, 1.05, 1.05, -2.65), K^+

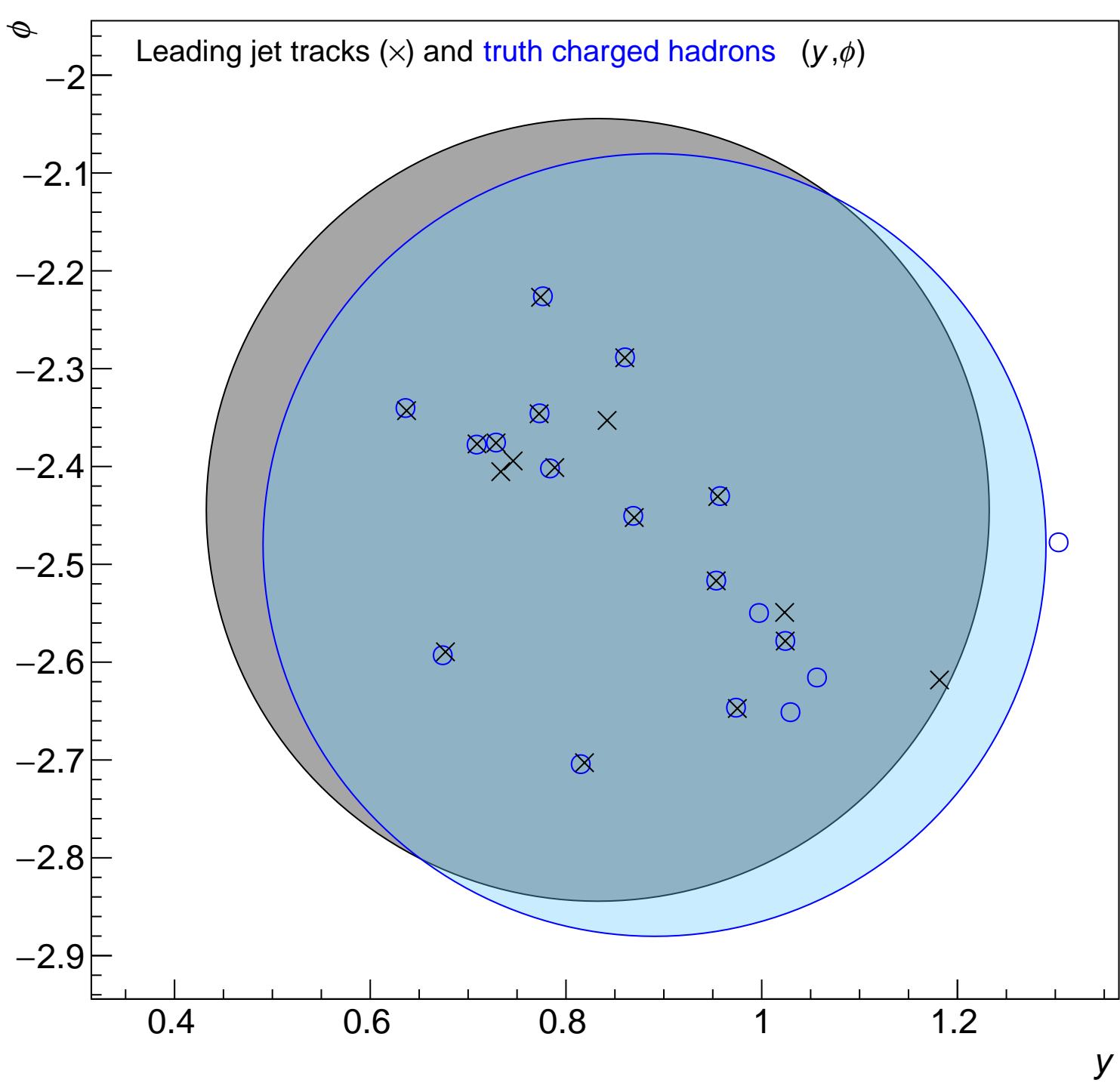
(4.2, 1.08, 1.08, -2.66), π^+

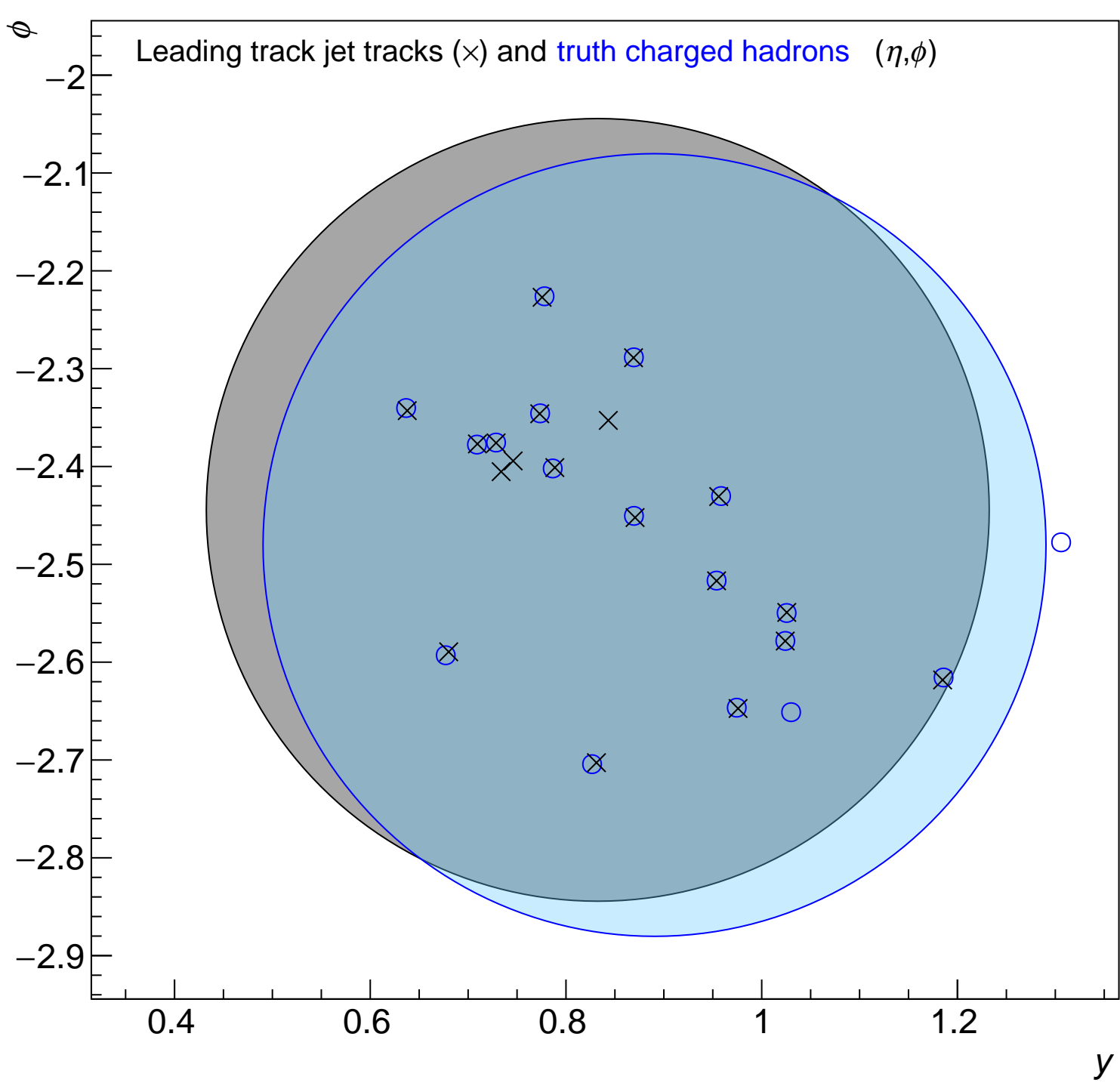
(17.6, 1.09, 1.09, -2.62), π^-

(9.2, 1.09, 1.09, -2.63), π^-

ϕ Run 300000, Event 689605777, $\mu = 26.5$, $N_{\text{PV}} = 16$, **reconstructed level**







Run 300000, Event 689605777, $\mu = 26.5$, $N_{\text{PV}} = 16$

Truth (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (101.1, 202.0, 0.18)

Reco (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (100.7, 199.8, 0.18)

$\Delta\phi(\text{ll}, j_1) = -2.19$, $\Delta R_{j_1}^{\text{tru-rec}} = 0.07$

2 truth muons, (p_{T} /GeV, y , ϕ)

(186.3, 0.24, 1.47)

(37.9, -0.09, 2.70)

2 reco muons, (p_{T} /GeV, y , ϕ)

(184.0, 0.24, 1.47)

(38.1, -0.09, 2.70)

51 truth jets, (p_{T} /GeV, y , ϕ)

(86.1, 0.89, -2.48)

(48.7, -1.19, 0.43)

(30.0, -0.43, -0.78)

(19.7, 0.40, -1.77)

(15.2, 0.37, -2.33)

(11.7, -0.32, -0.11)

(8.2, -0.89, -1.34)

(6.9, -1.67, -0.79)

(6.0, -5.47, -2.99)

(5.4, -1.66, 0.86)

(3.4, -0.58, 2.27)

(3.2, -1.10, -0.34)

(2.9, -1.37, -1.56)

(2.6, -1.04, -0.99)

(2.6, -0.76, 0.29)

(2.5, -0.79, 0.79)

(2.4, 1.48, -0.33)

(1.6, -1.07, 1.75)

(1.5, -0.42, -1.94)

(1.4, -0.02, -0.67)

(1.3, 3.91, -0.85)

(1.2, 4.08, -0.01)

(1.2, 3.73, 1.69)

(1.1, -2.06, -0.95)

(1.1, -7.53, -0.16)

(1.0, 1.13, -0.85)

(1.0, -1.62, -1.88)

(0.9, 4.42, 0.60)

(0.9, -0.56, -2.42)

(0.9, 2.92, -1.59)

(0.8, 1.62, 1.38)

(0.7, 2.83, 3.13)

(0.7, -6.28, 1.87)

(0.7, -4.42, -0.60)

(0.7, 1.35, 1.06)

(0.7, -6.55, -0.55)

(0.7, -0.65, 2.88)

(0.7, -2.23, -2.42)

(0.7, 3.72, -3.12)

(0.7, inf, -1.31)

(0.6, -3.62, -2.79)

(0.6, -1.95, 0.48)

(0.6, -7.66, -0.62)

(0.6, -2.92, 1.81)

(0.6, 2.12, 2.53)

(0.6, 4.02, 2.14)

(0.6, -4.33, 1.35)

(0.5, 1.74, 0.63)

(0.5, -5.23, -0.50)

(0.5, -3.54, -1.46)

(0.5, 1.06, -1.64)

27 reco jets, (p_{T} /GeV, y , ϕ)

(125.3, 0.83, -2.44)

(50.2, -1.19, 0.43)

(30.9, -0.42, -0.77)

(14.5, 0.35, -2.33)

(11.8, -0.32, -0.11)

(6.9, 0.34, -1.80)

(6.9, -0.93, -1.36)

(3.5, -1.83, -0.79)

(2.6, -0.76, 0.29)

(2.5, -1.05, -0.99)

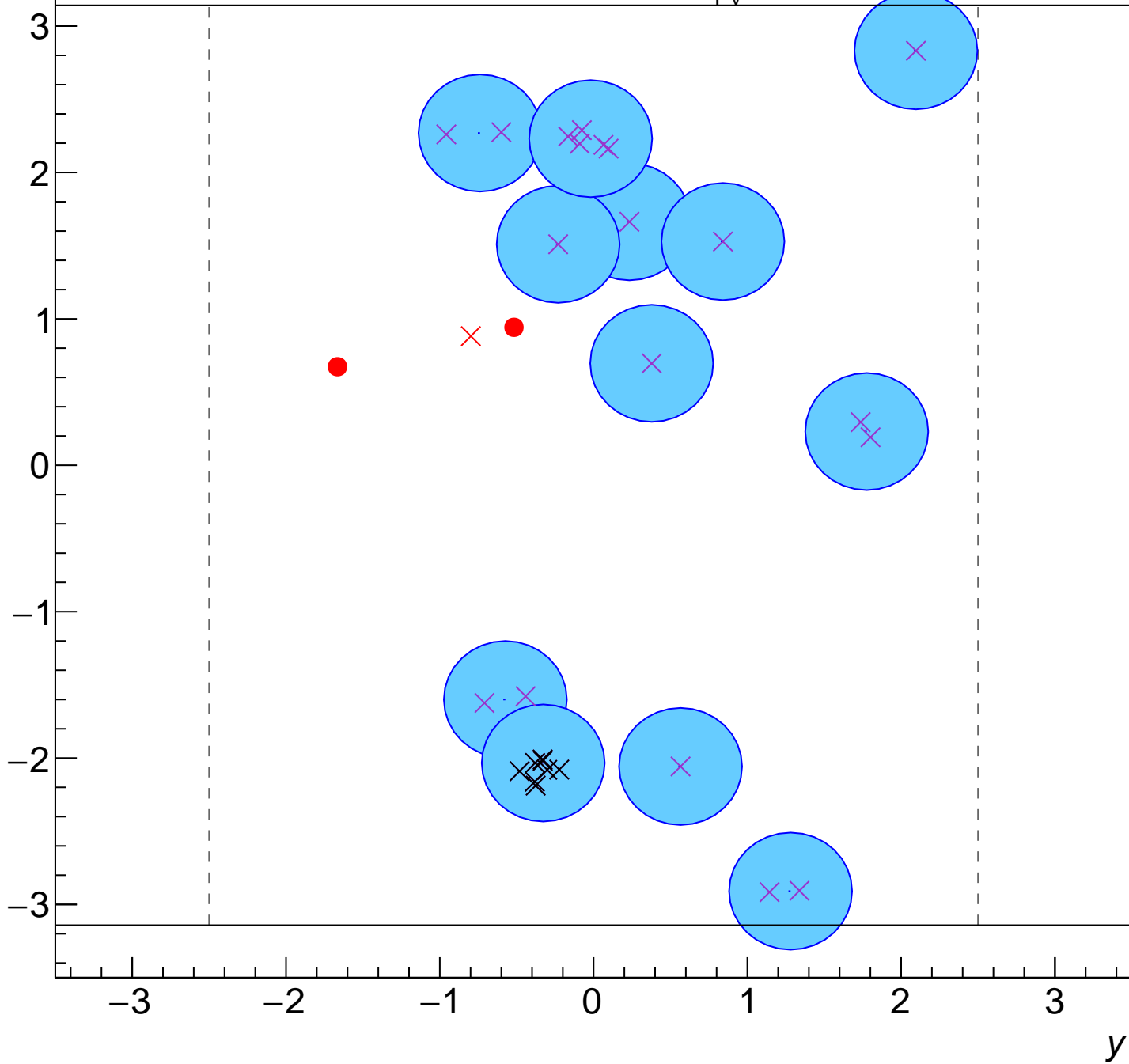
(2.3, -1.54, -1.34)

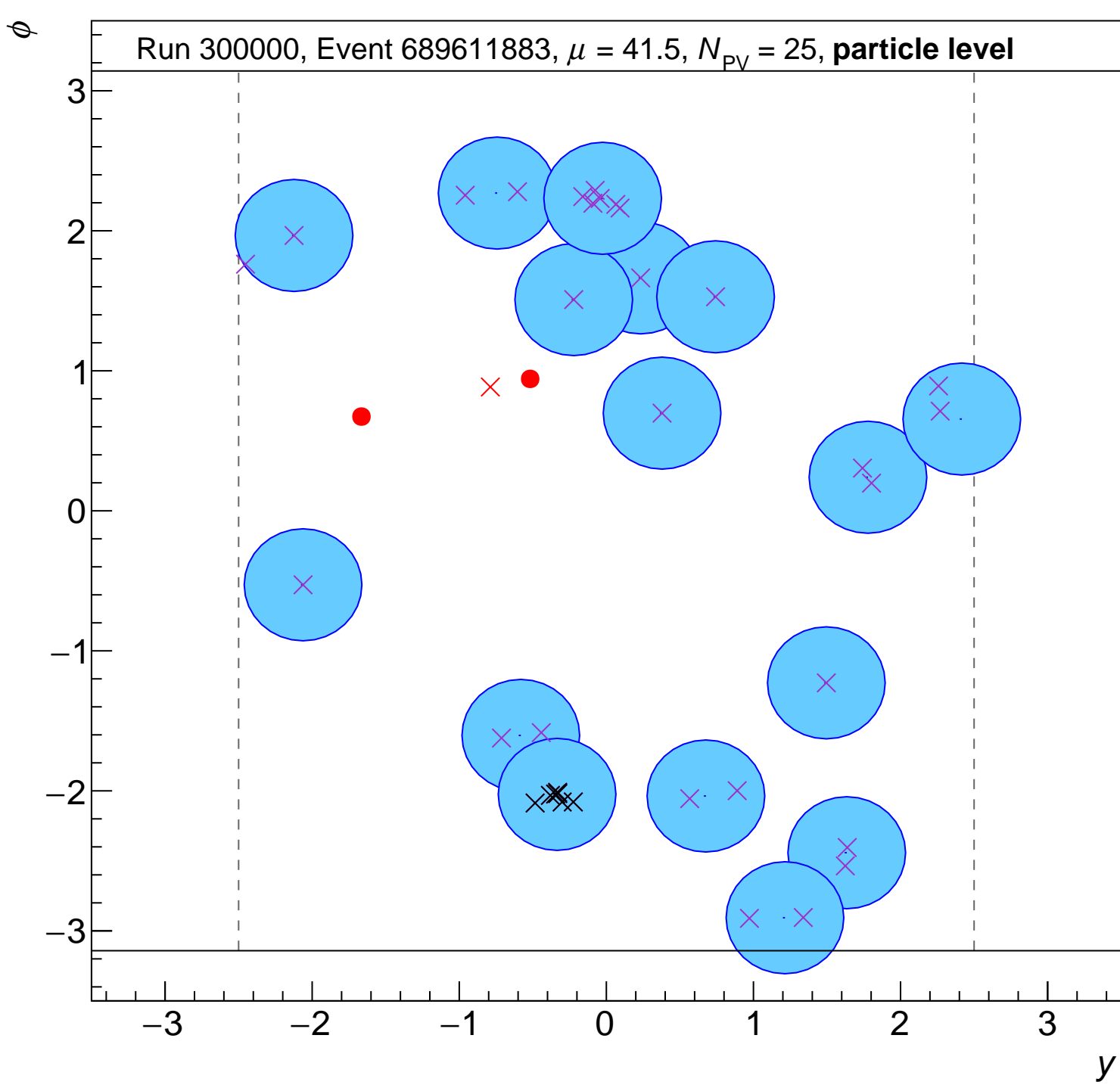
(2.0, -0.66, 2.25)

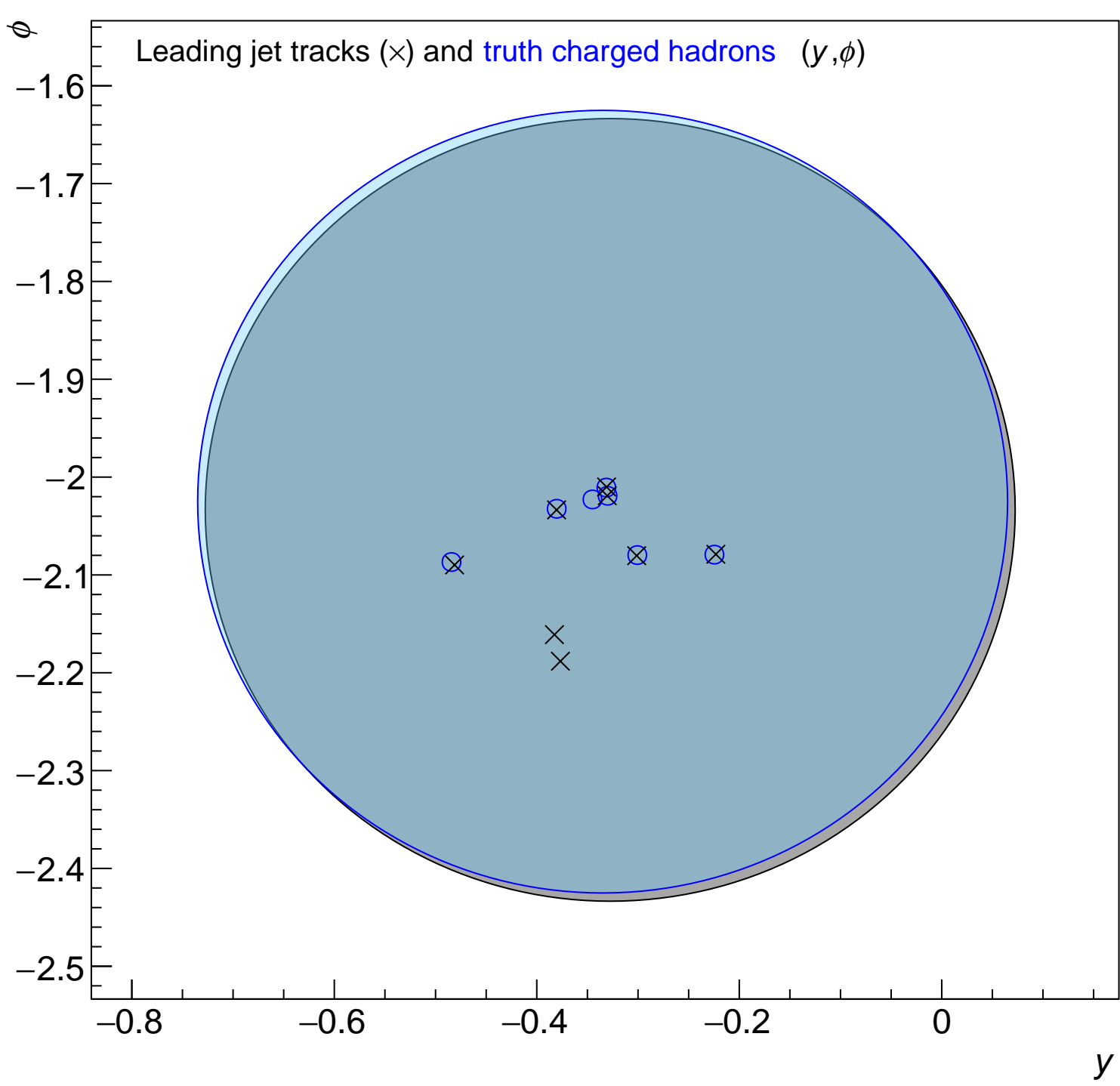
(2.0, -1.77, 1.00)

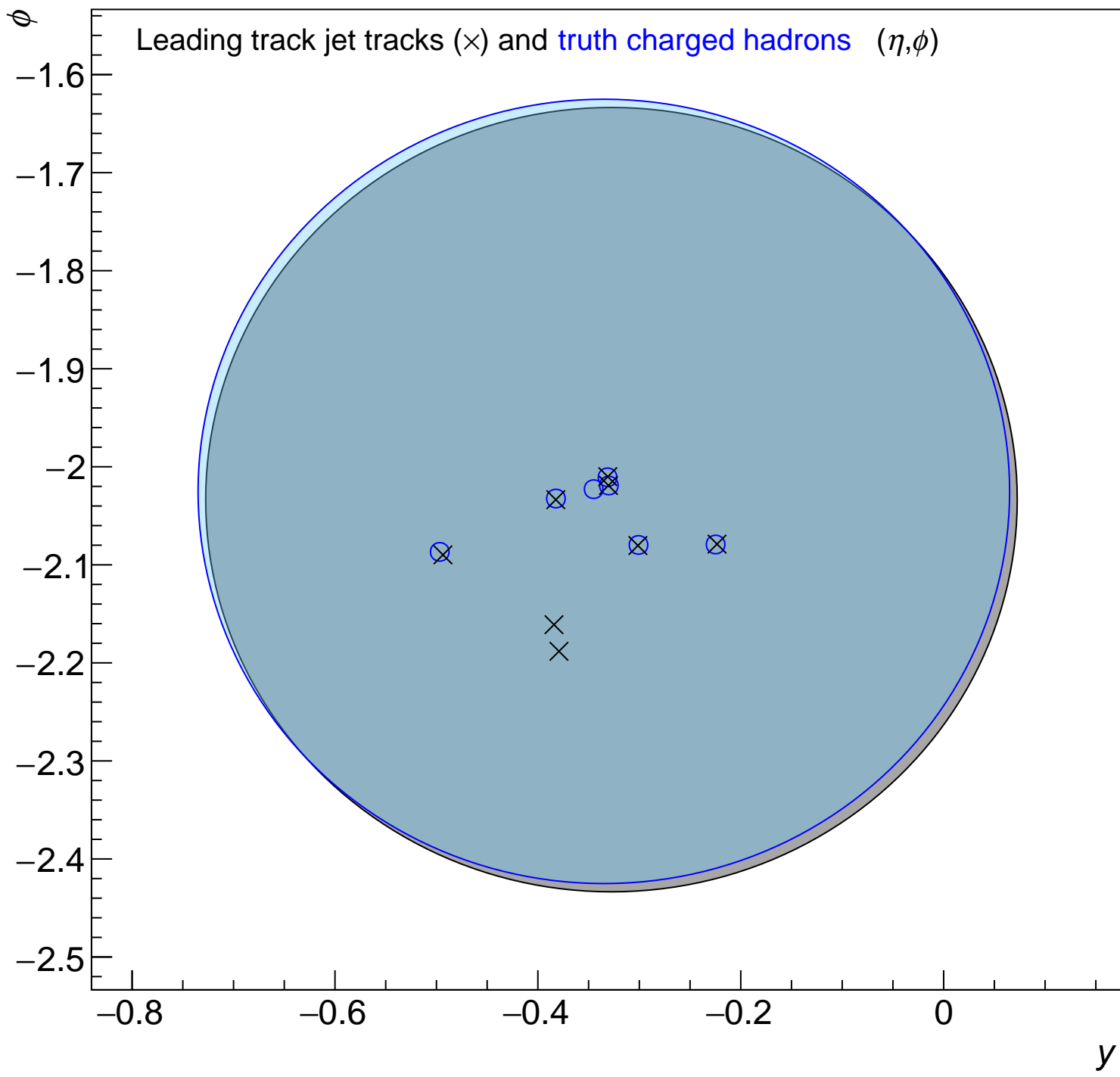
(1.8, 1.30, -2.48)

(1.7, 0.66, 0.75)

ϕ Run 300000, Event 689611883, $\mu = 41.5$, $N_{\text{PV}} = 25$, **reconstructed level**







Run 300000, Event 689611883, $\mu = 41.5$, $N_{\text{PV}} = 25$

Truth (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (91.8, 178.6, -0.79)

Reco (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (93.0, 178.4, -0.80)

$\Delta\phi(\text{ll}, j1) = 2.92$, $\Delta R_{j1}^{\text{tru-rec}} = 0.01$

2 truth muons, (p_{T} /GeV, y , ϕ)

(140.8, -0.52, 0.94)

(38.9, -1.66, 0.67)

2 reco muons, (p_{T} /GeV, y , ϕ)

(139.2, -0.52, 0.94)

(40.3, -1.67, 0.67)

37 truth jets, (p_{T} /GeV, y , ϕ)

(125.9, -0.33, -2.03)

(36.2, -0.03, 2.23)

(9.4, 2.42, 0.66)

(2.8, 3.50, -2.55)

(2.7, -5.02, 2.71)

(2.5, 3.49, -0.11)

(2.5, 3.81, 0.86)

(2.2, 1.21, -2.91)

(2.1, 1.63, -2.44)

(1.9, -0.22, 1.51)

(1.8, 0.68, -2.04)

(1.7, -0.58, -1.60)

(1.6, 2.56, -1.95)

(1.6, 0.74, 1.53)

(1.5, -5.32, 0.84)

(1.4, 1.78, 0.24)

(1.4, -2.54, 1.76)

(1.4, 0.23, 1.66)

(1.4, -5.07, 0.40)

(1.4, -0.74, 2.27)

(1.3, 4.04, -0.57)

(1.3, -2.12, 1.97)

(1.1, 6.04, -0.80)

(1.1, -4.33, -0.28)

(1.0, -3.07, -3.10)

(0.8, 5.88, -3.01)

(0.7, 1.50, -1.23)

(0.7, -5.96, -0.24)

(0.7, 0.38, 0.70)

(0.7, 3.67, -3.04)

(0.6, -4.47, -1.34)

(0.6, -3.44, 0.71)

(0.6, 6.63, -1.72)

(0.6, -4.18, 2.08)

(0.6, -2.95, 2.76)

(0.5, -2.06, -0.53)

(0.5, 4.17, -1.30)

12 reco jets, (p_{T} /GeV, y , ϕ)

(63.9, -0.33, -2.03)

(29.6, -0.02, 2.23)

(2.2, 1.28, -2.91)

(1.9, -0.23, 1.51)

(1.8, -0.57, -1.60)

(1.6, 0.84, 1.53)

(1.4, 1.78, 0.23)

(1.4, -0.74, 2.27)

(1.4, 0.23, 1.66)

(1.2, 0.57, -2.06)

(0.7, 0.38, 0.70)

(0.6, 2.10, 2.83)

35 charged truth hadrons, $p_{\text{T}} > 0.5$, $|y| < 2.5$

(63.0, -0.35, -2.02)

(42.4, -0.33, -2.02)

27 tracks, first 4

(41.2, -0.33, -2.02), matched to π^+

(11.9, -0.08, 2.29), matched to K^+

(10.8, 0.06, 2.19), matched to π^-

(9.3, -0.33, -2.01), matched to π^+

8 j1 tracks, (p_{T} /GeV, y , η , ϕ)

(0.6, -0.48, -0.49, -2.09),

(1.2, -0.38, -0.38, -2.19),

(1.5, -0.38, -0.38, -2.16),

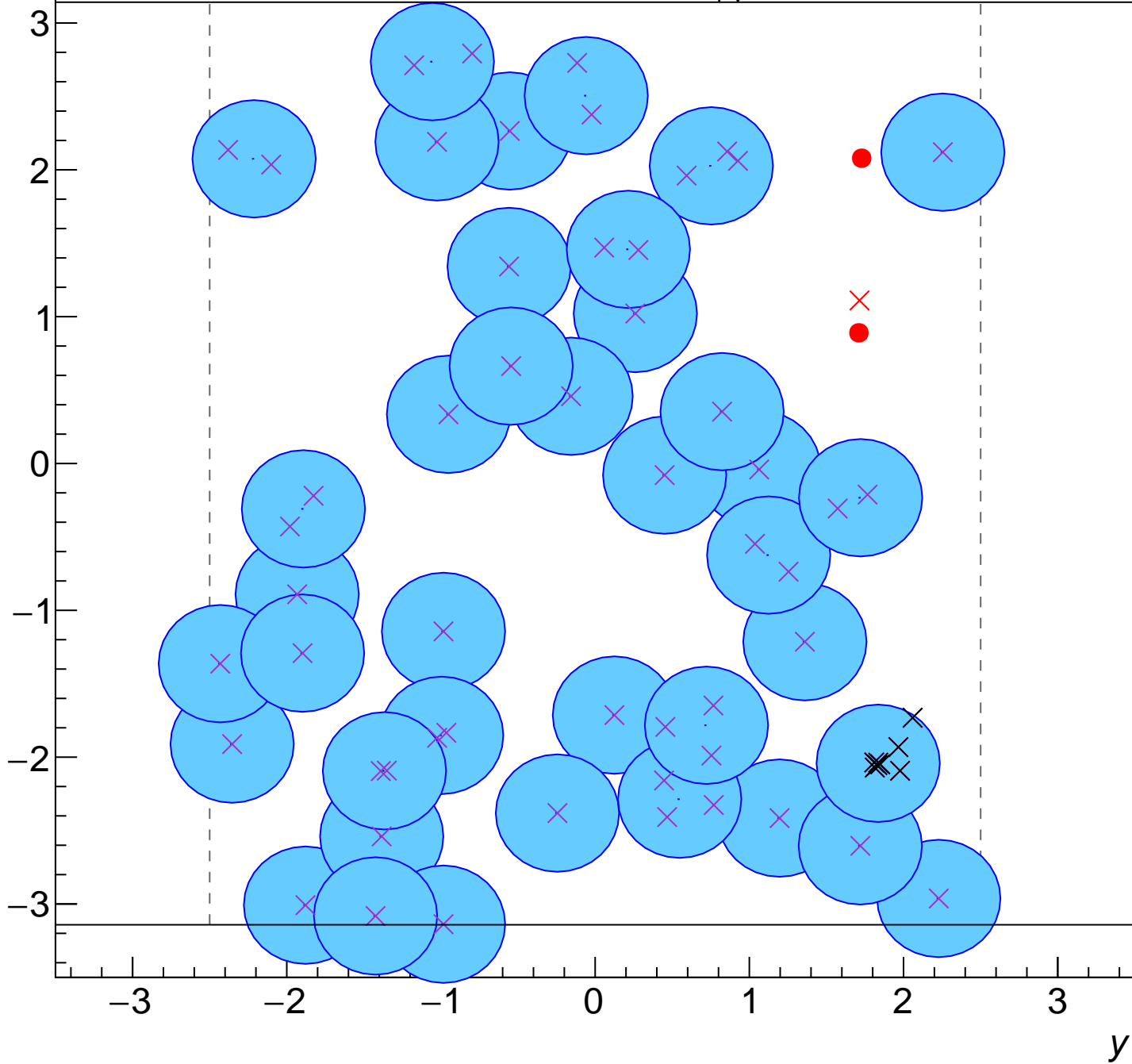
(2.9, -0.22, -0.22, -2.08),

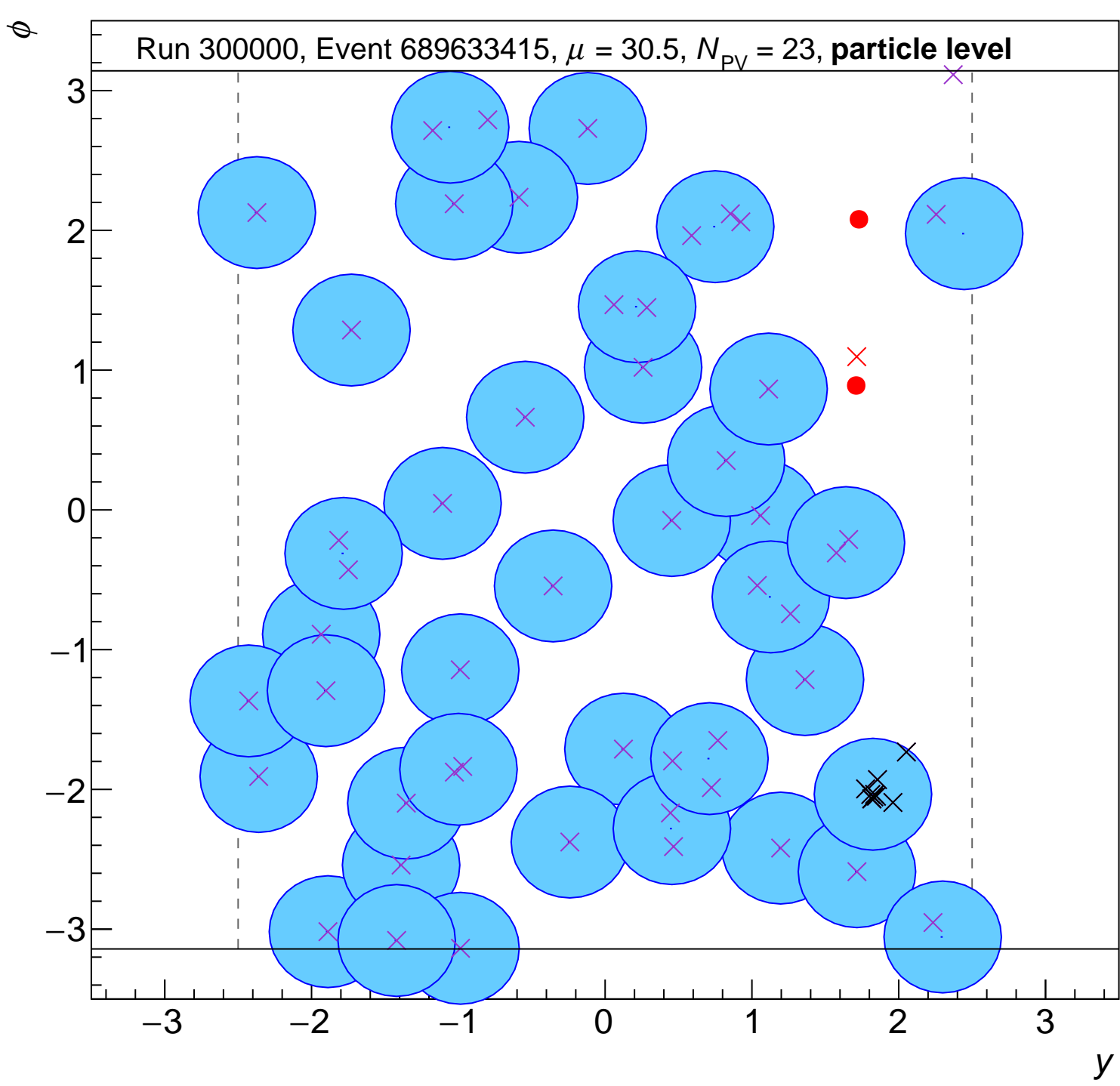
(5.9, -0.30, -0.30, -2.08),

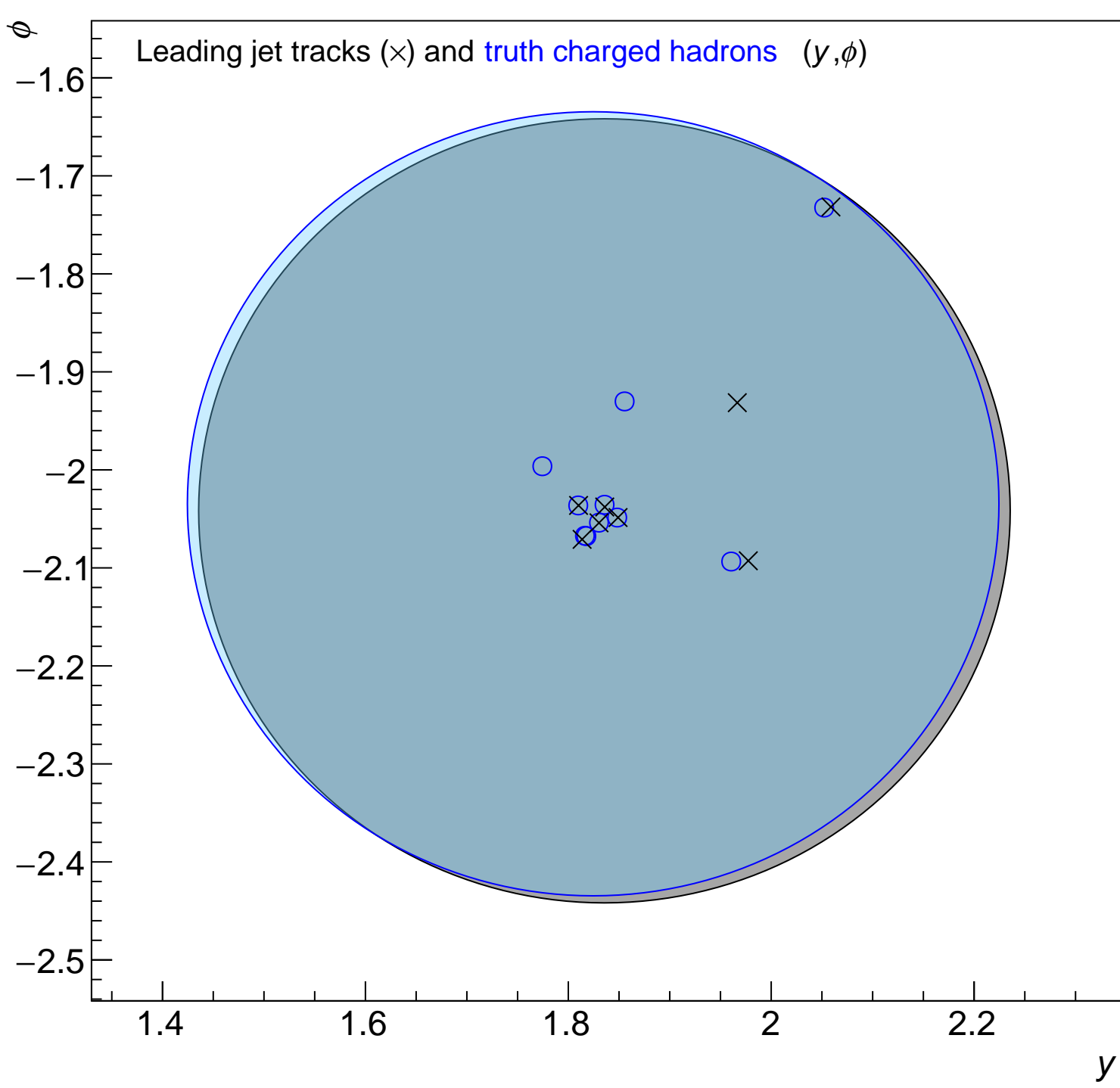
(1.4, -0.38, -0.38, -2.03),

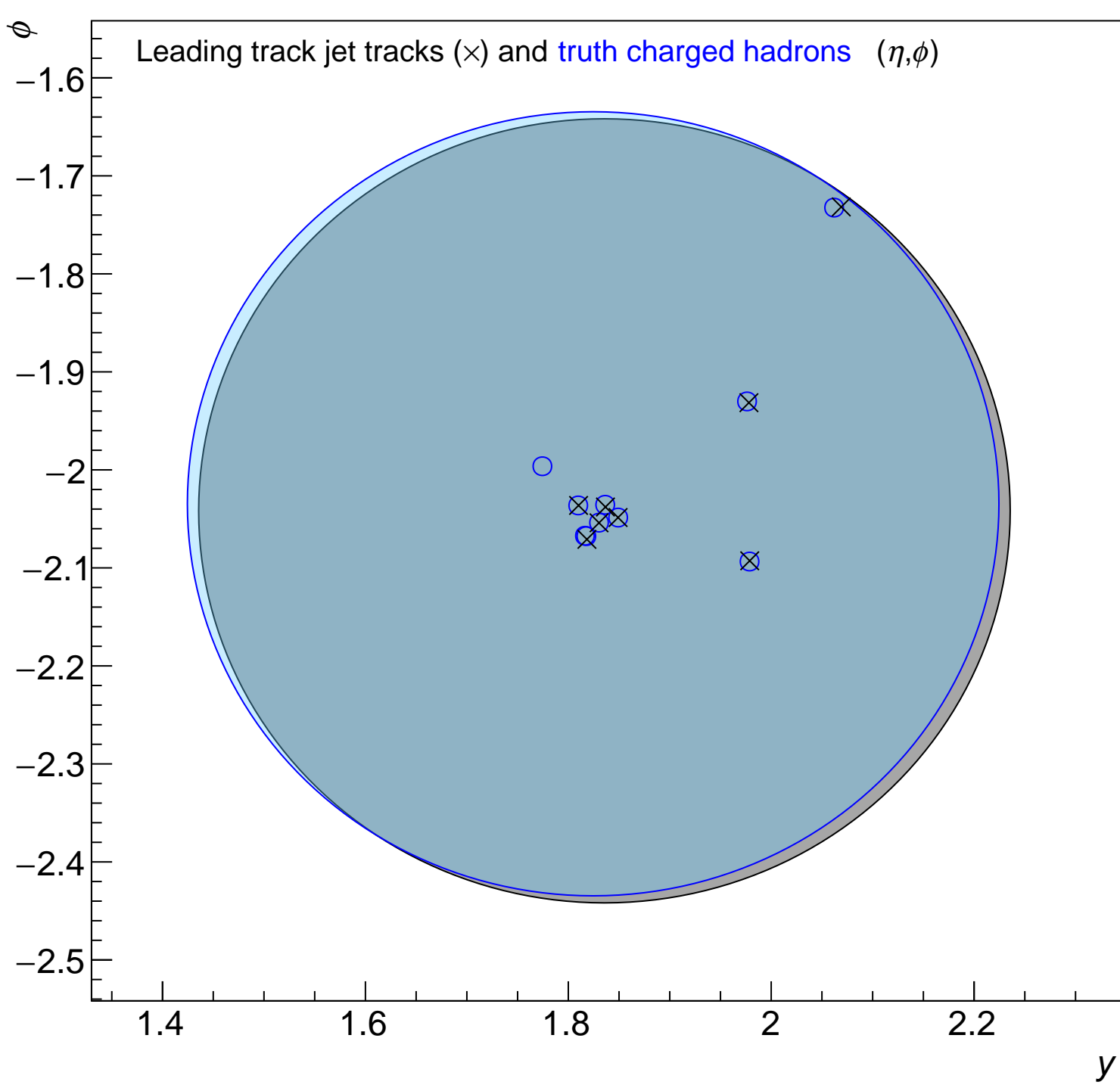
(41.2, -0.33, -0.33, -2.02),

(0.2, 0.33, 0.33, 2.01)

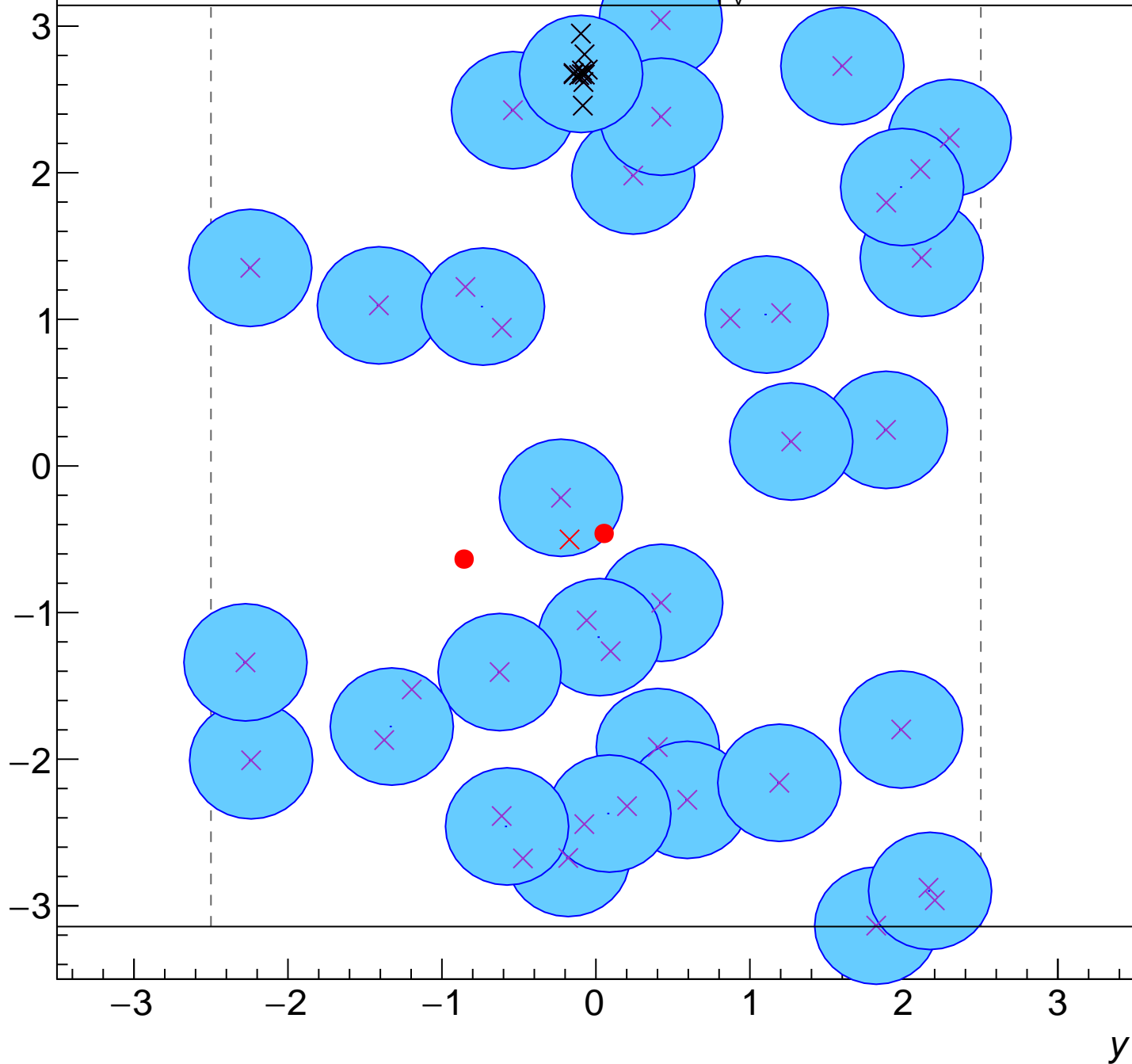
ϕ Run 300000, Event 689633415, $\mu = 30.5$, $N_{\text{PV}} = 23$, **reconstructed level**

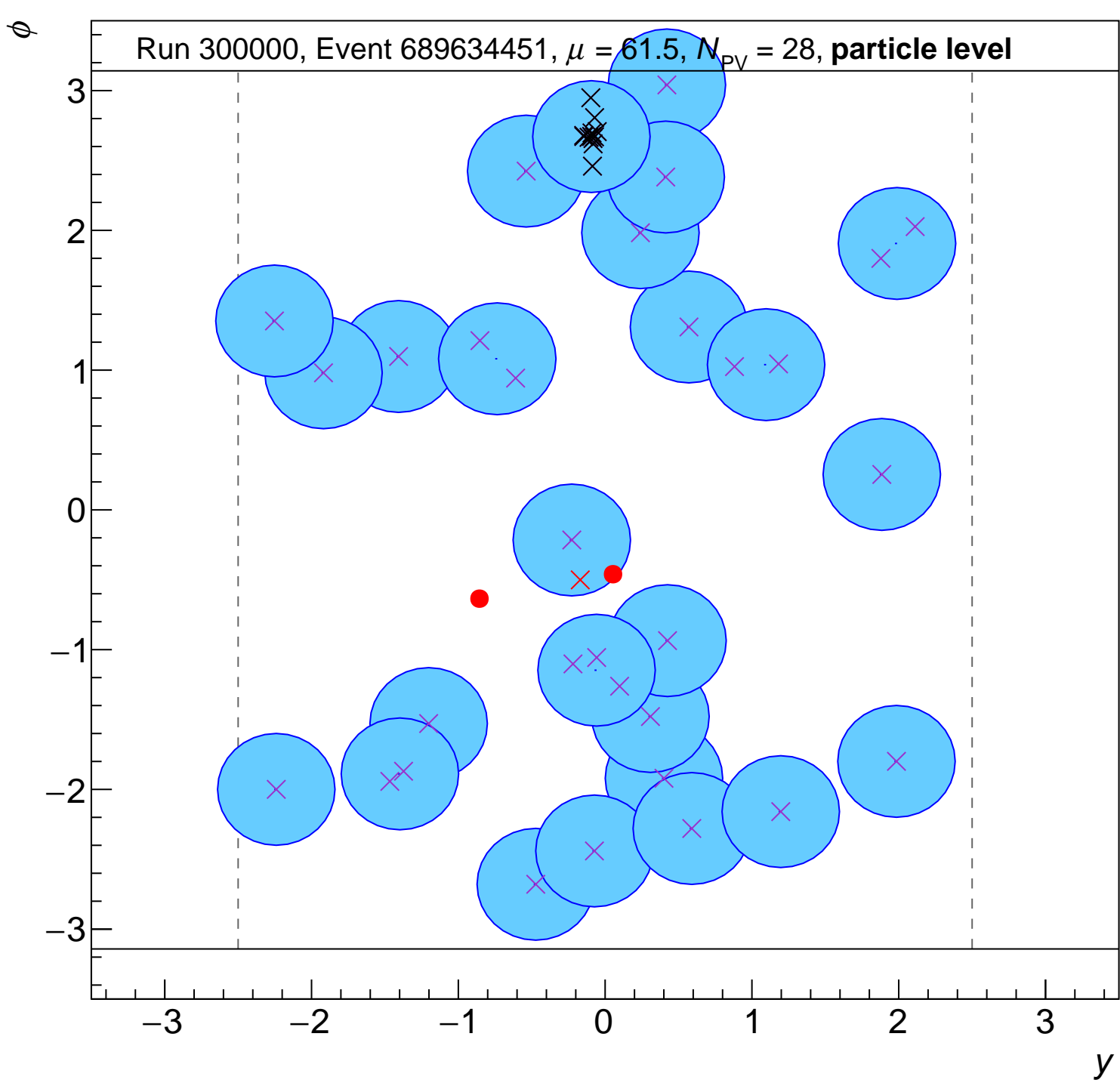


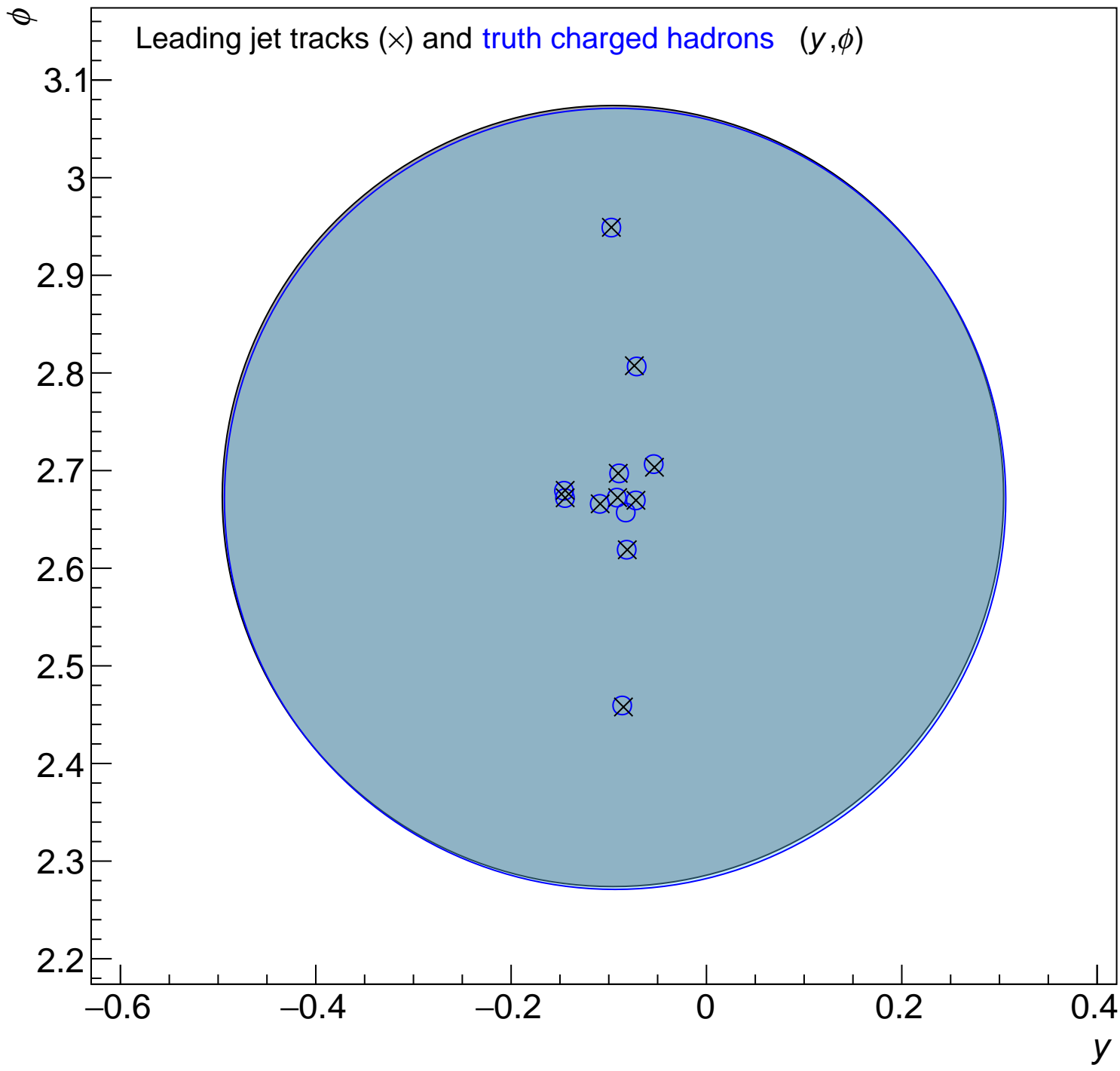


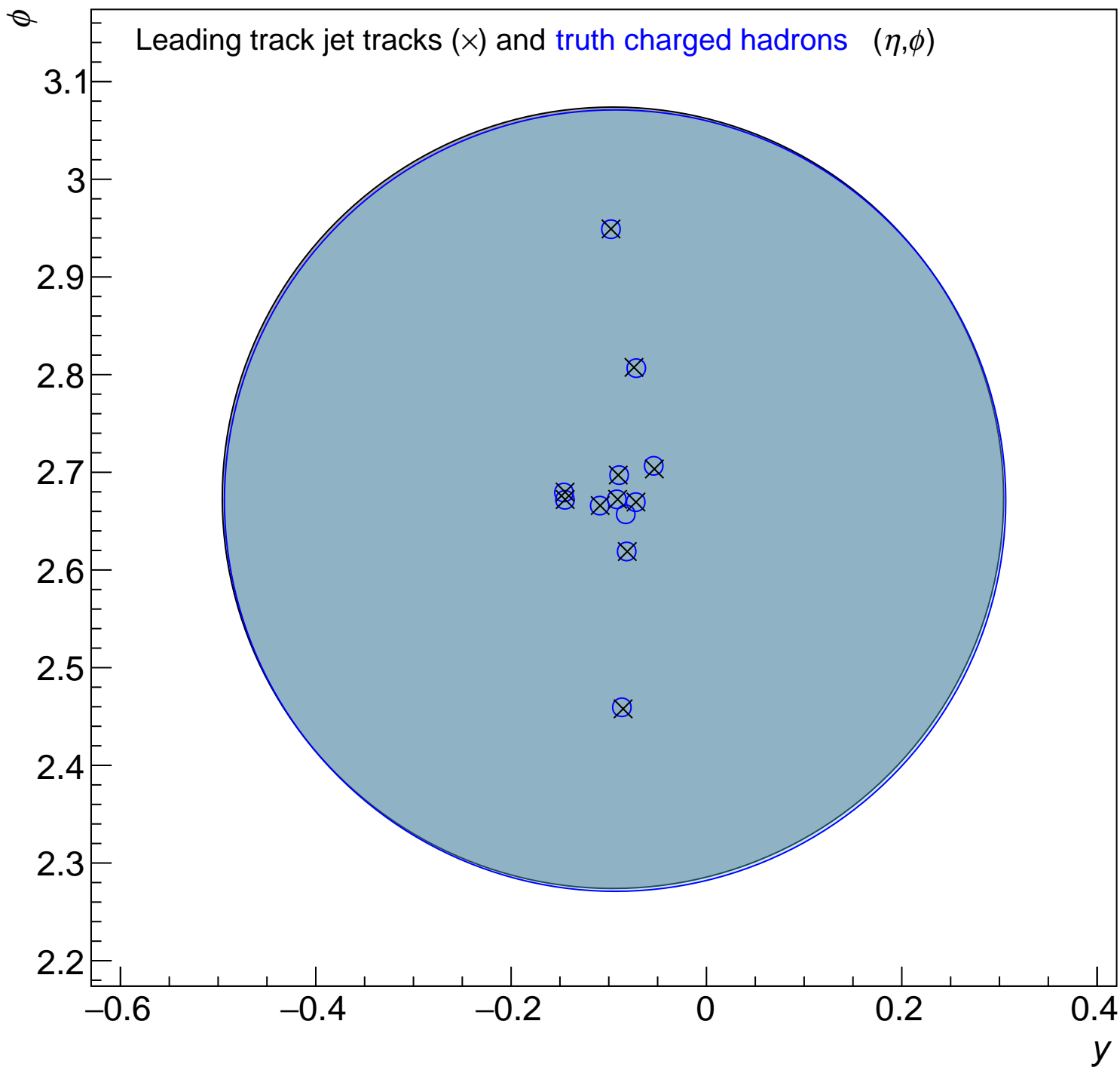


Run 300000, Event 689633415, $\mu = 30.5$, $N_{\text{PV}} = 23$	(0.9, -0.24, -2.38)
Truth ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (90.6, 181.8, 1.71)	(0.9, -1.39, -2.54)
Reco ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (96.0, 187.3, 1.71)	(0.9, 0.26, 1.02)
$\Delta\phi(\text{ll}, j1) = -3.13$, $\Delta R_{j1}^{\text{tru-rec}} = 0.01$	(0.9, -3.90, -0.88)
2 truth muons , ($p_{\text{T}}/\text{GeV}, y, \phi$)	(0.9, 3.03, 2.84)
(163.0, 1.71, 0.89)	(0.8, 5.57, 0.56)
(40.1, 1.73, 2.08)	(0.8, 4.07, 1.24)
2 reco muons , ($p_{\text{T}}/\text{GeV}, y, \phi$)	(0.8, -4.78, 2.18)
(166.3, 1.71, 0.89)	(0.8, -8.52, -1.86)
(44.1, 1.73, 2.08)	(0.8, -0.99, -1.14)
59 truth jets , ($p_{\text{T}}/\text{GeV}, y, \phi$)	(0.8, -1.93, -0.89)
(100.7, 1.82, -2.03)	(0.7, -1.73, 1.29)
(13.1, -0.54, 0.66)	(0.7, 4.06, 1.80)
(4.4, 0.71, -1.78)	(0.7, 0.45, -0.08)
(2.6, -1.06, 2.74)	(0.7, 3.15, -2.06)
(2.5, 0.22, 1.45)	(0.6, -0.12, 2.73)
(2.4, 0.75, 2.03)	(0.6, -3.73, -3.08)
(2.4, 1.64, -0.23)	(0.6, 1.36, -1.21)
(2.0, 0.45, -2.28)	(0.6, -1.11, 0.05)
(1.8, 2.45, 1.98)	(0.6, 1.20, -2.42)
(1.8, 1.11, 0.86)	(0.6, 1.06, -0.04)
(1.5, -5.49, 0.04)	(0.6, -3.43, 0.69)
(1.5, -1.00, -1.86)	(0.6, 3.06, 2.35)
(1.4, -4.12, 2.15)	(0.6, -1.89, -3.02)
(1.4, 0.82, 0.35)	(0.6, -4.66, 2.81)
(1.3, 1.13, -0.62)	(0.6, -2.36, -1.91)
(1.3, -1.78, -0.31)	(0.6, 3.02, -1.56)
(1.2, -1.90, -1.29)	(0.5, -2.37, 2.13)
(1.2, -1.42, -3.08)	(0.5, 0.12, -1.71)
(1.1, -1.35, -2.10)	(0.5, -4.67, -1.65)
(1.1, -5.71, -0.55)	(0.5, -7.07, -0.61)
(1.1, -1.03, 2.19)	(0.5, -0.35, -0.54)
(1.1, 2.30, -3.06)	39 reco jets , ($p_{\text{T}}/\text{GeV}, y, \phi$)
(1.1, -0.59, 2.24)	(85.7, 1.84, -2.04)
(1.0, -2.43, -1.37)	(13.1, -0.54, 0.66)
(1.0, 7.52, 1.68)	(4.6, 0.72, -1.78)
(1.0, -0.99, -3.14)	(2.8, 0.55, -2.29)
(1.0, 1.72, -2.59)	(2.7, -1.06, 2.74)
	(2.5, 0.22, 1.46)
	(2.4, 0.75, 2.03)

ϕ Run 300000, Event 689634451, $\mu = 61.5$, $N_{\text{PV}} = 28$, **reconstructed level**







Run 300000, Event 689634451, $\mu = 61.5$, $N_{\text{PV}} = 28$

Truth ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (90.6, 223.4, -0.17)

Reco ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (90.4, 222.3, -0.17)

$\Delta\phi(\text{ll}, j1) = 3.11$, $\Delta R_{j1}^{\text{tru-rec}} = 0.00$

2 truth muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(171.9, 0.05, -0.46)

(52.1, -0.86, -0.64)

2 reco muons, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(170.6, 0.05, -0.46)

(52.3, -0.86, -0.64)

50 truth jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(159.0, -0.09, 2.67)

(6.4, -4.31, 1.33)

(3.5, 0.41, 2.38)

(2.8, 1.10, 1.04)

(2.7, -4.08, 1.67)

(2.6, -0.54, 2.42)

(2.0, -0.06, -1.15)

(2.0, -1.40, -1.89)

(1.9, -3.21, -2.15)

(1.9, -3.03, -1.33)

(1.8, 1.99, 1.91)

(1.6, 4.60, -2.65)

(1.4, -4.21, -2.34)

(1.3, -2.25, 1.35)

(1.2, 0.43, -0.94)

(1.2, -0.73, 1.08)

(1.1, 1.98, -1.80)

(1.1, -0.23, -0.22)

(1.1, 8.39, 0.10)

(1.0, -5.65, 0.91)

(1.0, -1.92, 0.98)

(1.0, 3.78, -2.15)

(0.9, 0.42, 3.04)

(0.9, 5.40, -1.45)

(0.9, 0.31, -1.48)

(0.9, -3.09, -2.84)

(0.9, -3.65, 0.90)

(0.9, -5.03, 1.42)

(0.9, -5.46, -2.89)

(0.8, -1.41, 1.10)

(0.8, -3.47, -2.96)

(0.7, 1.20, -2.16)

(0.7, -4.73, 1.93)

(0.7, 0.59, -2.28)

(0.7, -0.07, -2.44)

(0.7, 0.40, -1.92)

(0.6, -4.37, 0.90)

(0.6, -4.93, -2.45)

(0.6, 1.88, 0.25)

(0.6, -3.16, 1.79)

(0.6, -3.71, -2.39)

(0.6, -5.12, 0.57)

(0.5, -0.47, -2.68)

(0.5, -2.24, -2.00)

(0.5, -4.25, -0.03)

(0.5, 0.24, 1.98)

(0.5, -6.55, 1.91)

(0.5, -1.20, -1.53)

(0.5, 0.57, 1.31)

(0.5, 3.92, 0.20)

31 reco jets, ($p_{\text{T}}/\text{GeV}, y, \phi$)

(132.9, -0.10, 2.67)

(3.5, 0.42, 2.38)

(3.5, 2.17, -2.90)

(3.0, 1.82, -3.14)

(2.9, 1.11, 1.03)

(2.6, -0.54, 2.43)

(2.1, -0.58, -2.46)

(2.0, -1.33, -1.78)

(1.8, 1.99, 1.90)

(1.7, 0.09, -2.37)

(1.3, -0.63, -1.41)

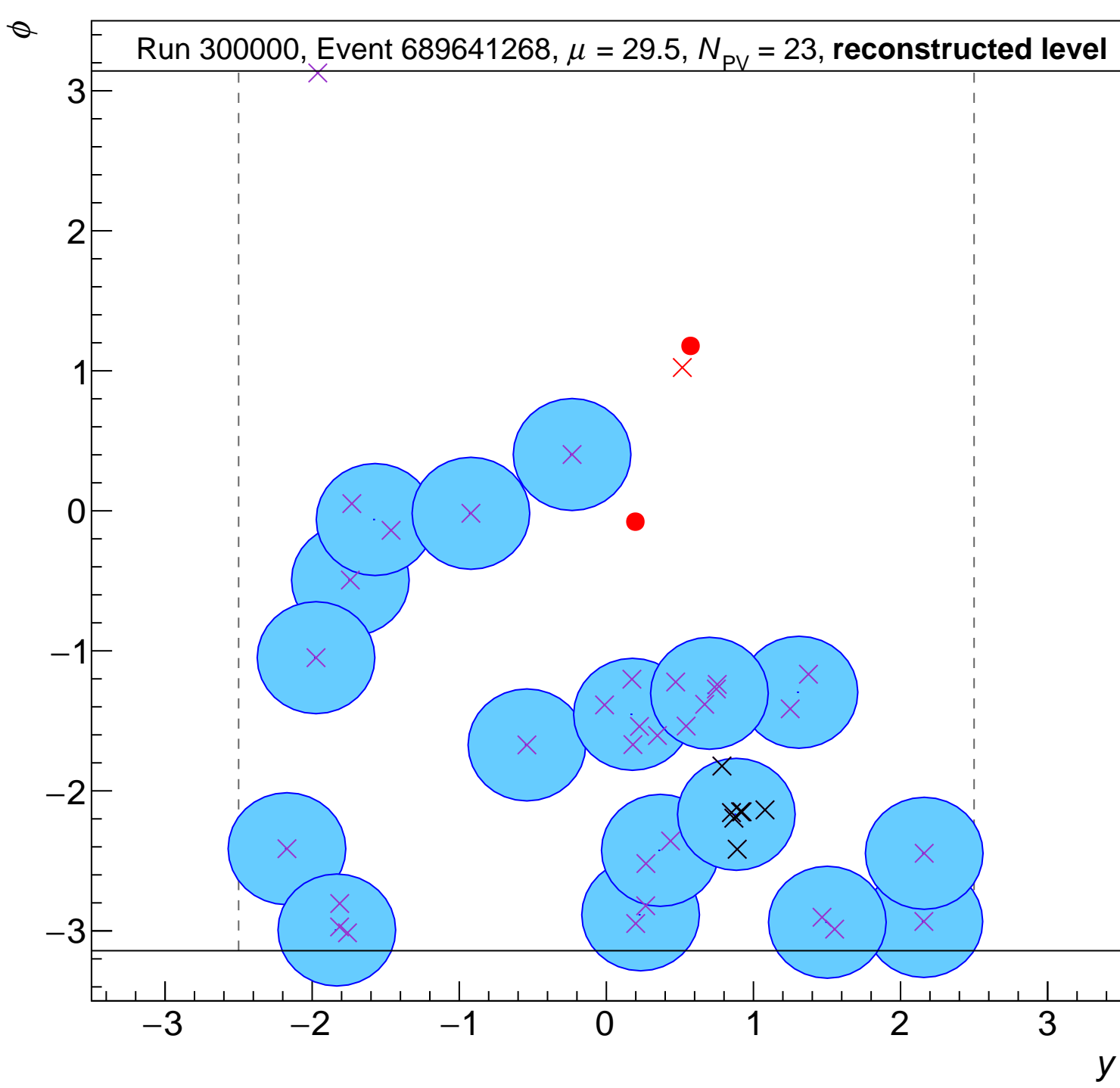
(1.3, -2.24, 1.35)

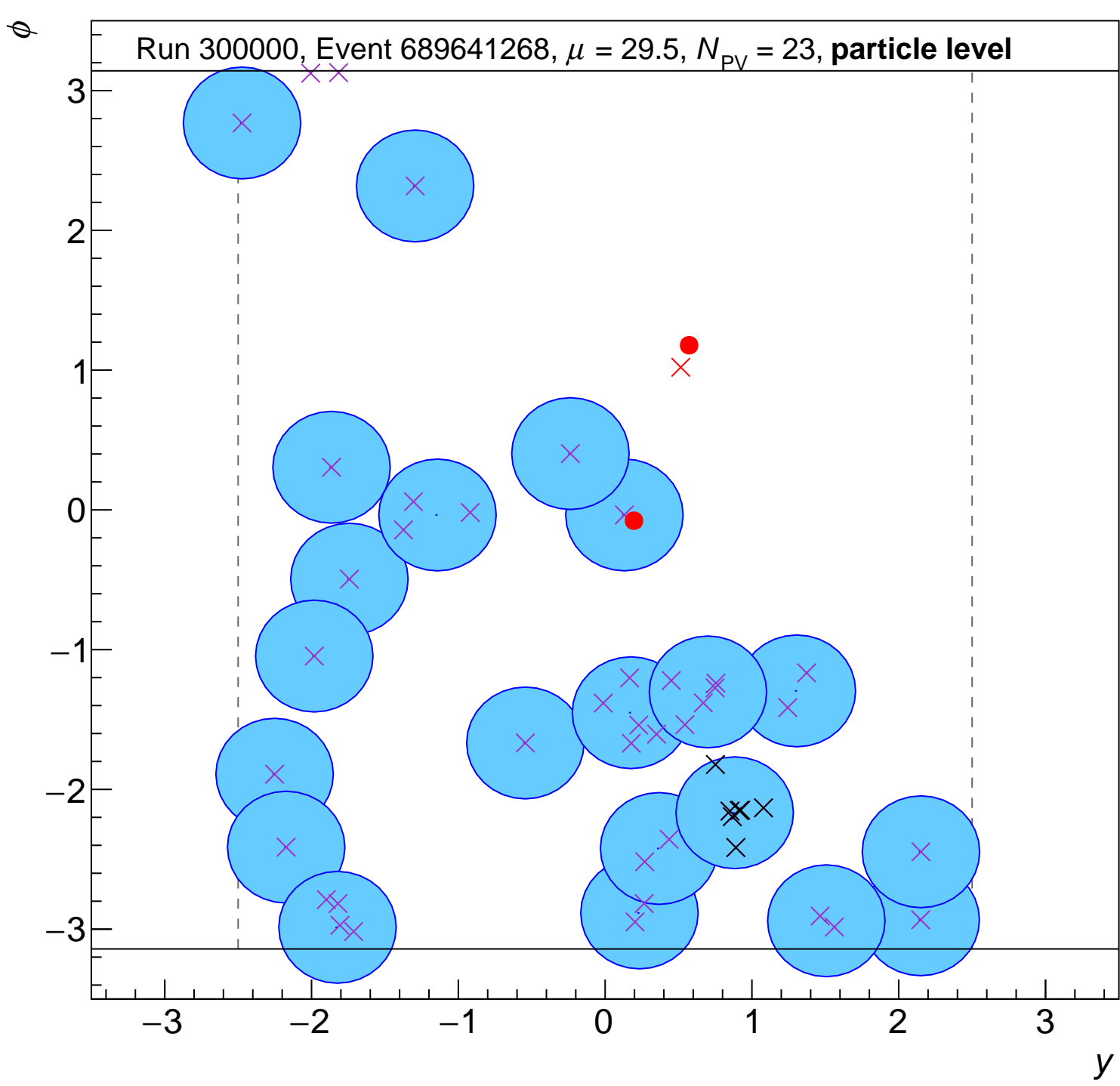
(1.3, 0.02, -1.17)

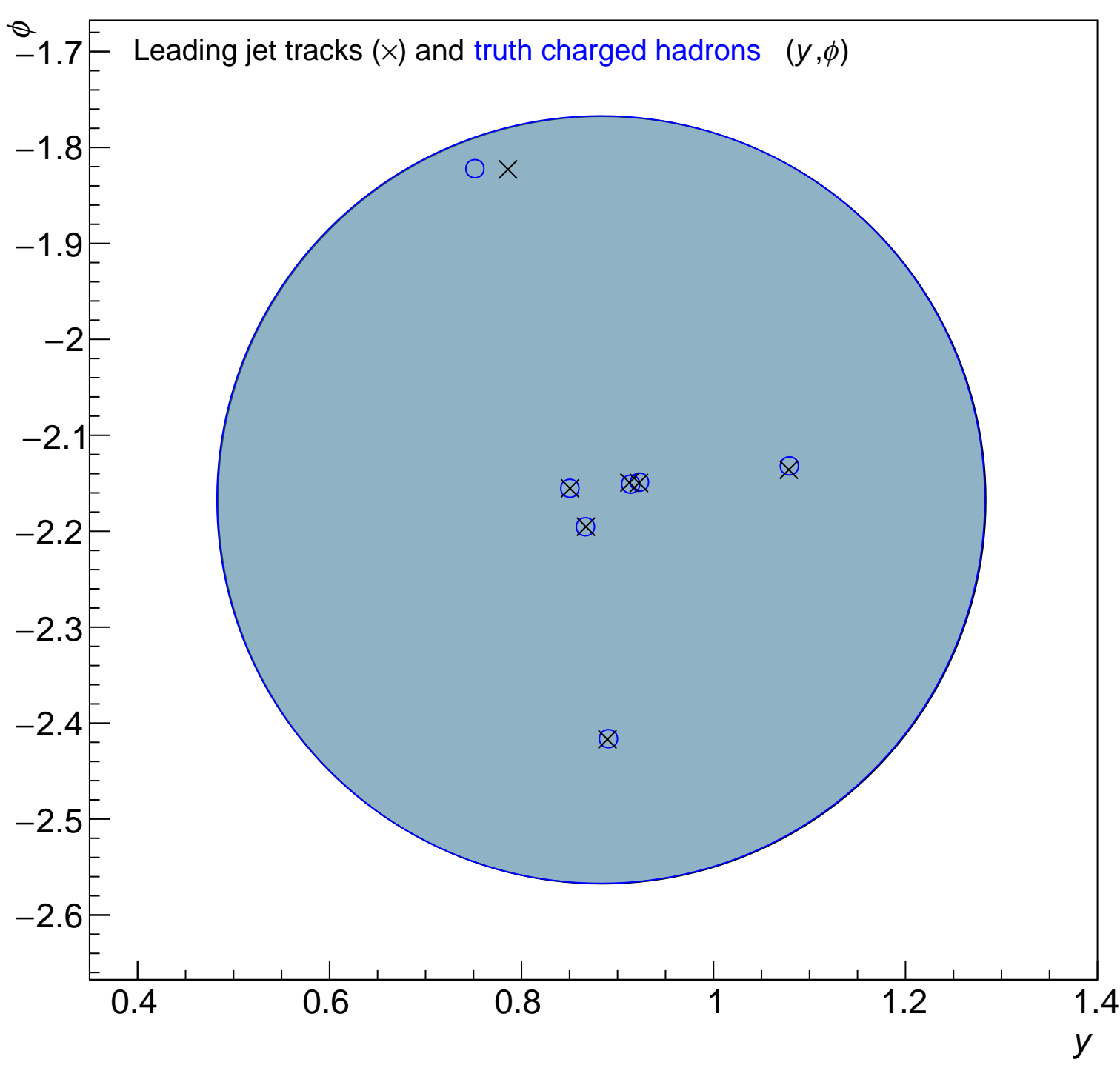
(1.2, 0.42, -0.93)

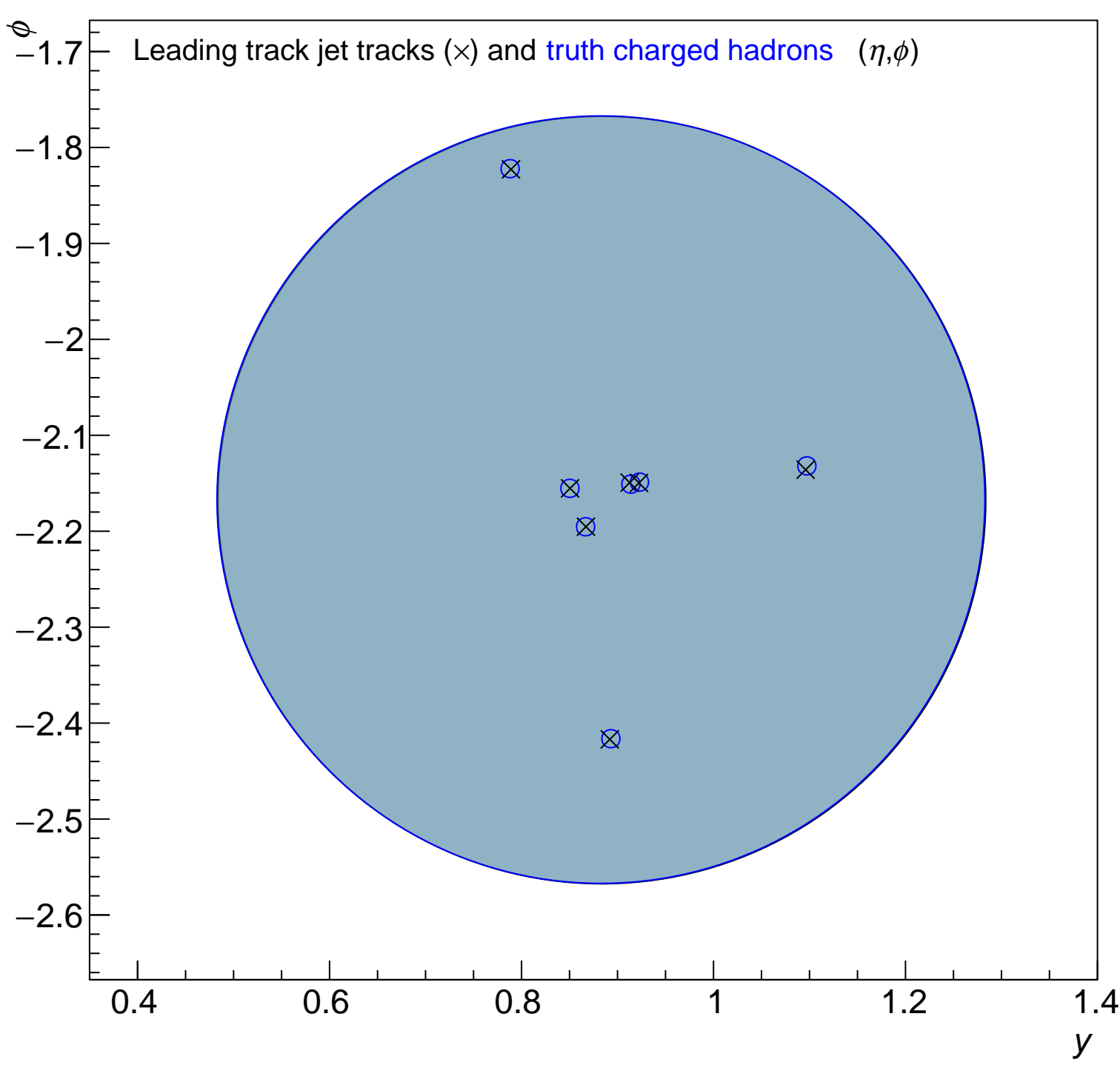
(1.2, -0.73, 1.09)

(1.1, 1.98, -1.80)









Run 300000, Event 689641268, $\mu = 29.5$, $N_{\text{PV}} = 23$

Truth (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (91.9, 189.5, 0.52)

Reco (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (94.0, 195.6, 0.52)

$\Delta\phi(\text{ll}, j1) = -3.09$, $\Delta R_{j1}^{\text{tru-rec}} = 0.00$

2 truth muons, (p_{T} /GeV, y , ϕ)

(177.4, 0.57, 1.18)

(31.3, 0.20, -0.08)

2 reco muons, (p_{T} /GeV, y , ϕ)

(183.4, 0.57, 1.18)

(31.6, 0.20, -0.08)

46 truth jets, (p_{T} /GeV, y , ϕ)

(61.6, 0.88, -2.17)

(32.5, 0.70, -1.30)

(9.7, -1.82, -2.99)

(6.7, 0.18, -1.45)

(5.7, 3.98, -2.15)

(4.6, -4.30, 0.50)

(4.3, 4.24, 2.48)

(3.8, 2.85, 2.95)

(3.7, -1.14, -0.04)

(3.2, -5.19, 1.97)

(3.1, 2.15, -2.45)

(2.4, -0.24, 0.40)

(2.4, 0.37, -2.42)

(2.1, 4.44, 2.04)

(1.9, -2.17, -2.41)

(1.8, 1.51, -2.94)

(1.7, -2.62, 2.38)

(1.7, -5.74, -2.71)

(1.7, -3.75, 0.79)

(1.4, 2.72, -1.91)

(1.4, -0.54, -1.67)

(1.4, 0.23, -2.88)

(1.3, -3.54, -1.48)

(1.1, 1.31, -1.30)

(1.0, -4.73, -0.78)

(1.0, 0.13, -0.04)

(1.0, 3.86, -2.68)

(1.0, -3.98, 0.13)

(1.0, -1.86, 0.30)

(0.9, -1.98, -1.05)

(0.9, -2.89, 0.14)

(0.9, -1.29, 2.32)

(0.8, 4.01, 2.00)

(0.8, -2.25, -1.89)

(0.7, -4.65, 2.63)

(0.7, -1.74, -0.50)

(0.7, 6.50, -2.51)

(0.7, 2.15, -2.93)

(0.7, -4.27, -2.04)

(0.6, -3.39, -0.59)

(0.6, -4.99, 0.04)

(0.6, 2.77, 1.15)

(0.5, -2.47, 2.77)

(0.5, -3.06, -1.66)

(0.5, -3.88, -0.95)

(0.5, 7.31, 2.29)

17 reco jets, (p_{T} /GeV, y , ϕ)

(62.4, 0.88, -2.17)

(33.4, 0.70, -1.30)

(7.0, -1.83, -2.99)

(6.6, 0.18, -1.45)

(3.1, 2.16, -2.45)

(2.5, -0.23, 0.40)

(2.4, 0.37, -2.42)

(2.0, -0.92, -0.02)

(1.8, -2.17, -2.41)

(1.8, -1.57, -0.06)

(1.8, 1.50, -2.94)

(1.4, -0.54, -1.67)

(1.4, 0.23, -2.89)

(1.1, 1.31, -1.30)

(0.9, -1.97, -1.05)

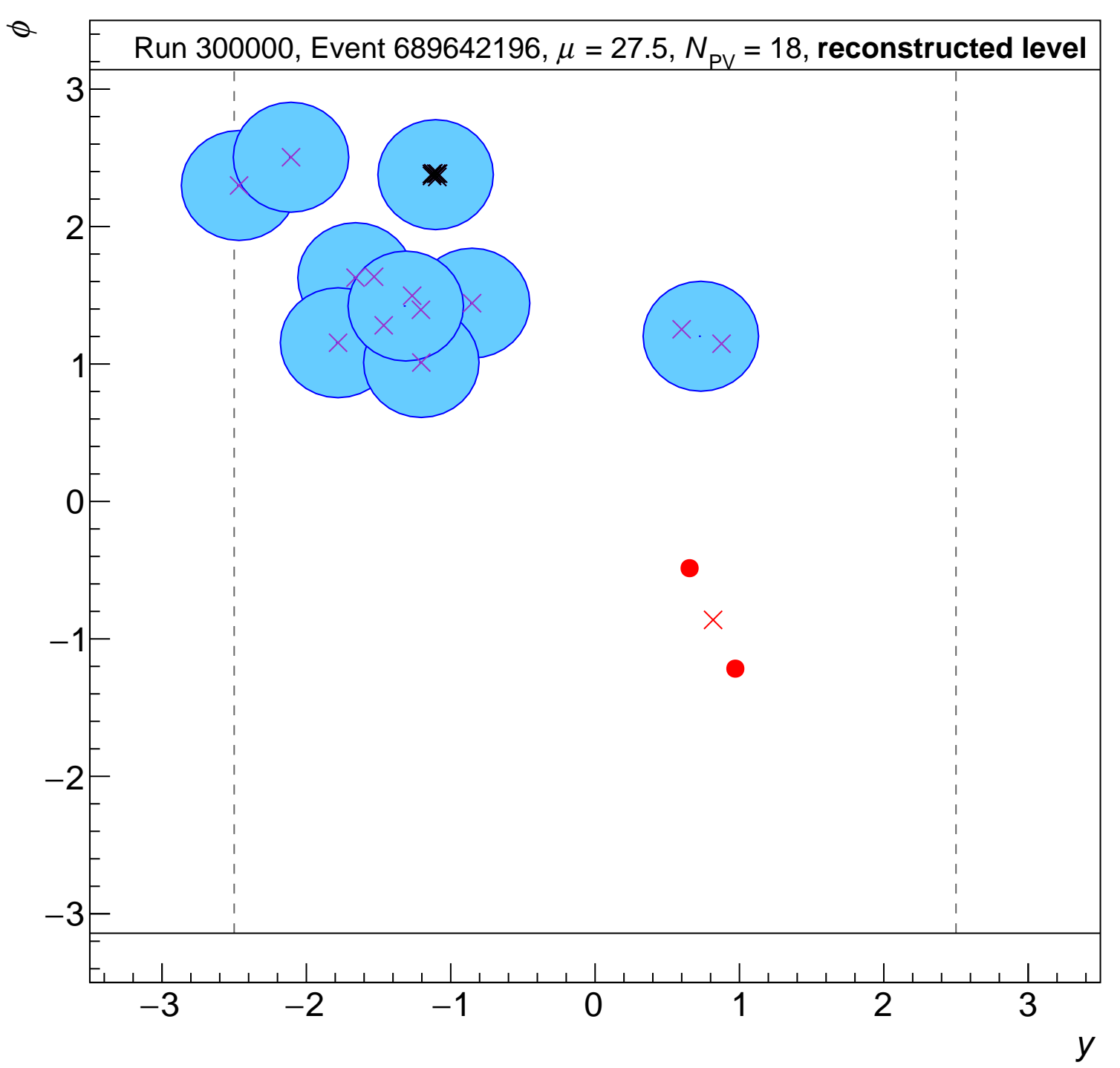
(0.7, 2.16, -2.93)

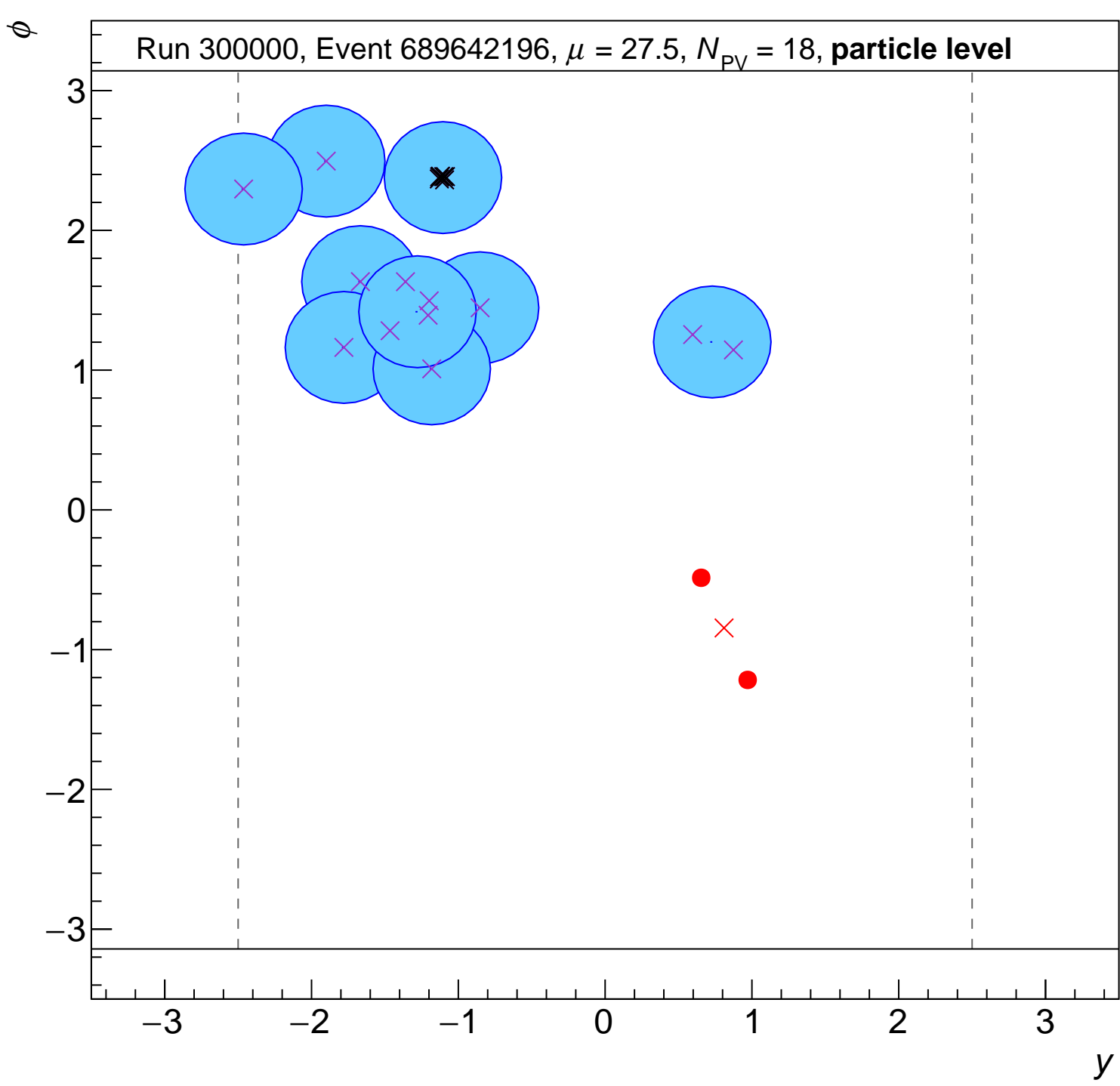
(0.7, -1.74, -0.49)

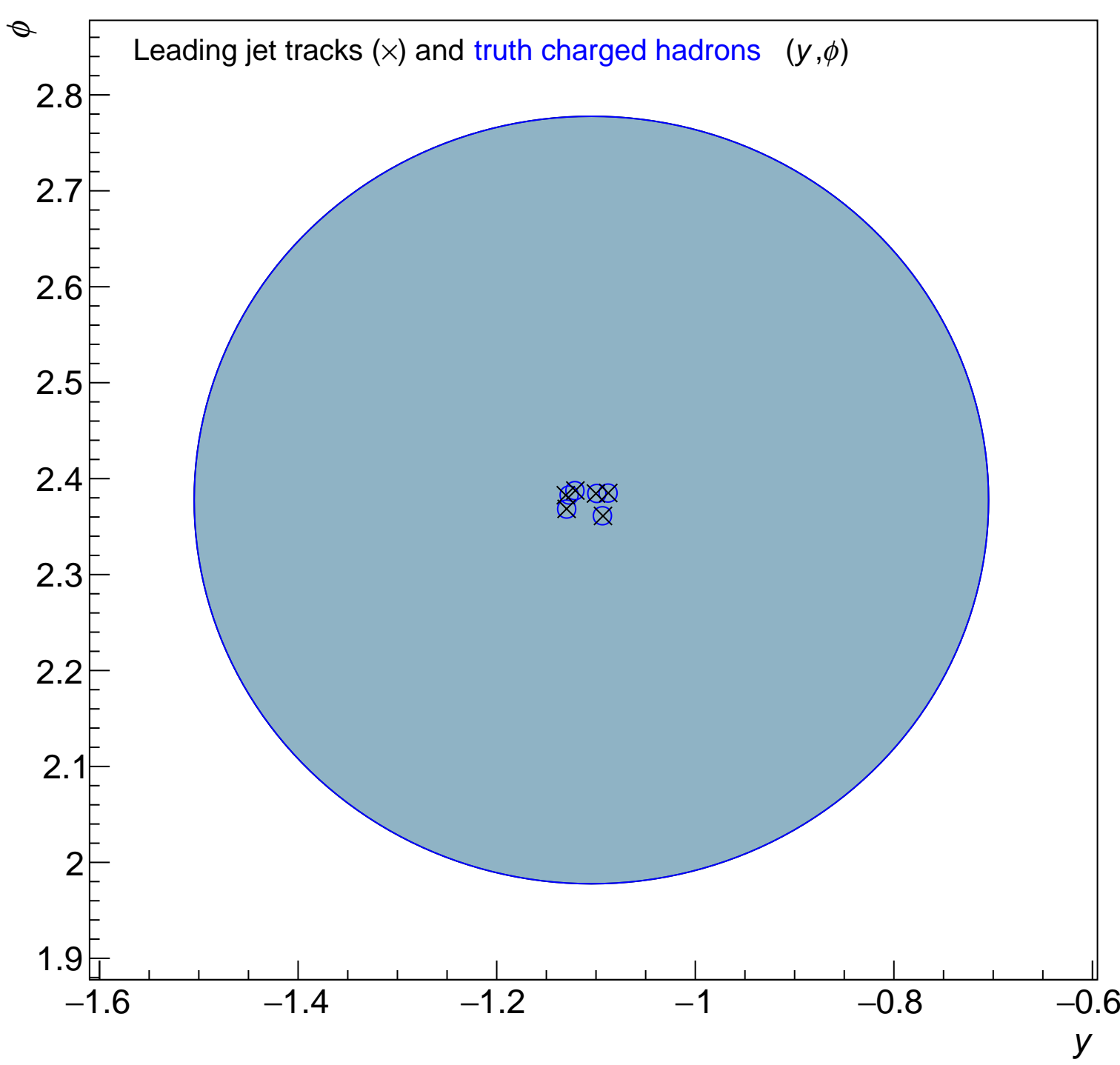
46 charged truth hadrons, $p_{\text{T}} > 0.5$, $|y| < 2.5$

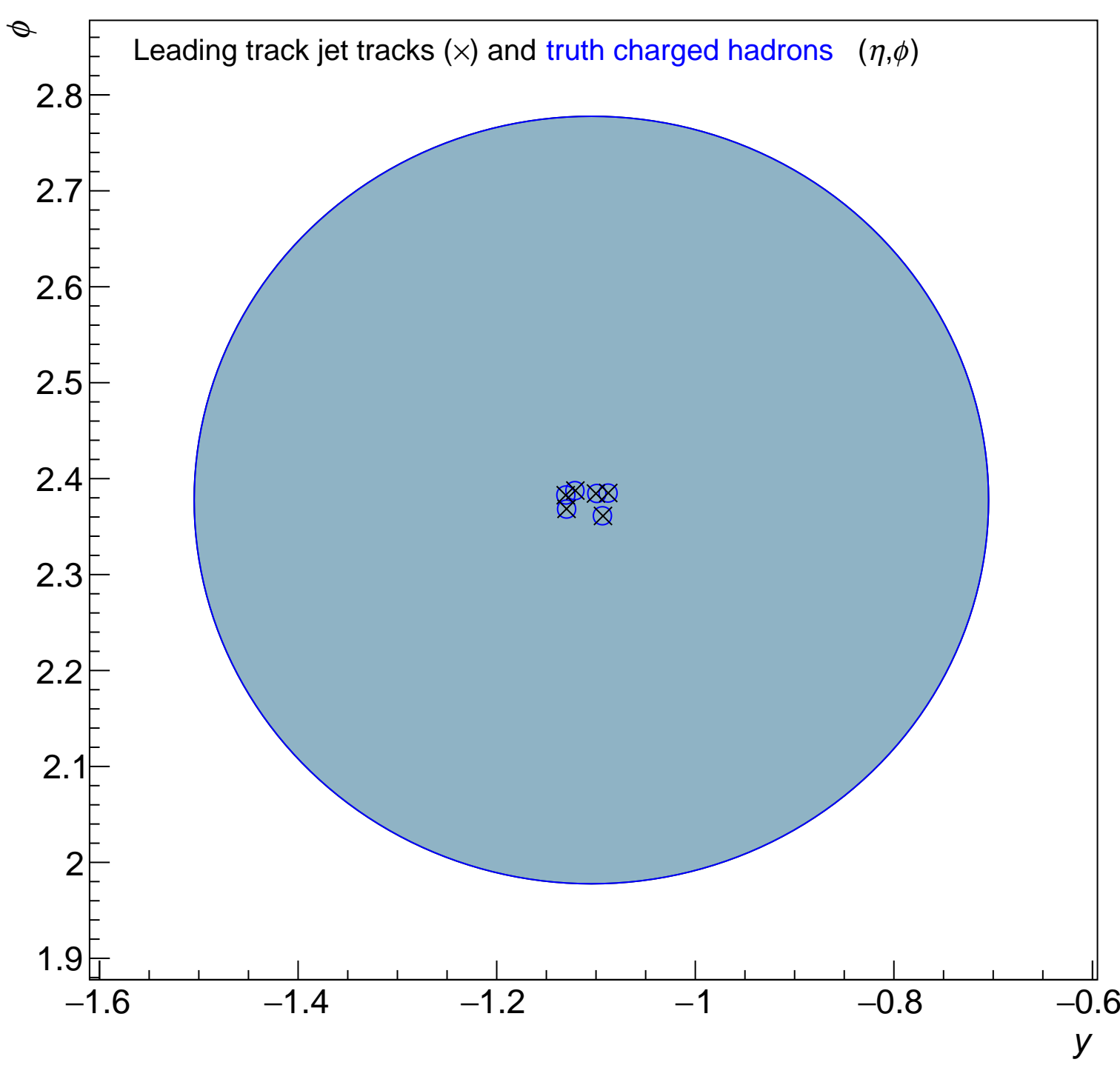
(22.9, 0.87, -2.20)

(16.5, 0.92, -2.15)









Run 300000, Event 689642196, $\mu = 27.5$, $N_{\text{PV}} = 18$

Truth (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (89.9, 214.7, 0.81)

Reco (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (91.8, 219.2, 0.82)

$\Delta\phi(\text{ll}, \text{j1}) = 3.04$, $\Delta R_{\text{j1}}^{\text{tru-rec}} = 0.00$

2 truth muons, (p_{T} /GeV, y , ϕ)

(116.9, 0.65, -0.49)

(113.0, 0.97, -1.22)

2 reco muons, (p_{T} /GeV, y , ϕ)

(120.6, 0.97, -1.22)

(114.1, 0.65, -0.49)

11 truth jets, (p_{T} /GeV, y , ϕ)

(153.6, -1.10, 2.38)

(5.9, -1.28, 1.42)

(2.0, -1.18, 1.01)

(2.0, 0.73, 1.20)

(0.7, -0.85, 1.45)

(0.7, -1.78, 1.16)

(0.6, -2.46, 2.30)

(0.6, -1.90, 2.50)

(0.6, -1.67, 1.63)

(0.6, -6.68, -1.87)

(0.5, -7.44, -0.72)

9 reco jets, (p_{T} /GeV, y , ϕ)

(153.3, -1.10, 2.38)

(5.8, -1.31, 1.42)

(2.0, -1.20, 1.01)

(2.0, 0.73, 1.20)

(0.7, -0.85, 1.44)

(0.7, -1.78, 1.15)

(0.6, -2.11, 2.50)

(0.6, -1.66, 1.63)

(0.6, -2.47, 2.30)

18 charged truth hadrons, $p_{\text{T}} > 0.5$, $|y| < 2.5$

(41.5, -1.09, 2.36)

(34.1, -1.12, 2.39)

18 tracks, first 4

(41.1, -1.09, 2.36), matched to π^+

(33.3, -1.12, 2.39), matched to π^+

(29.7, -1.10, 2.38), matched to π^-

(27.5, -1.09, 2.39), matched to π^-

6 j1 tracks, (p_{T} /GeV, y , η , ϕ)

(11.3, -1.13, -1.13, 2.37),

(33.3, -1.12, -1.12, 2.39),

(10.4, -1.13, -1.13, 2.38),

(41.1, -1.09, -1.09, 2.36),

(29.7, -1.10, -1.10, 2.38),

(27.5, -1.09, -1.09, 2.39),

6 j1 charged hadrons, (p_{T} /GeV, y , η , ϕ)

(11.2, -1.13, -1.13, 2.37), π^-

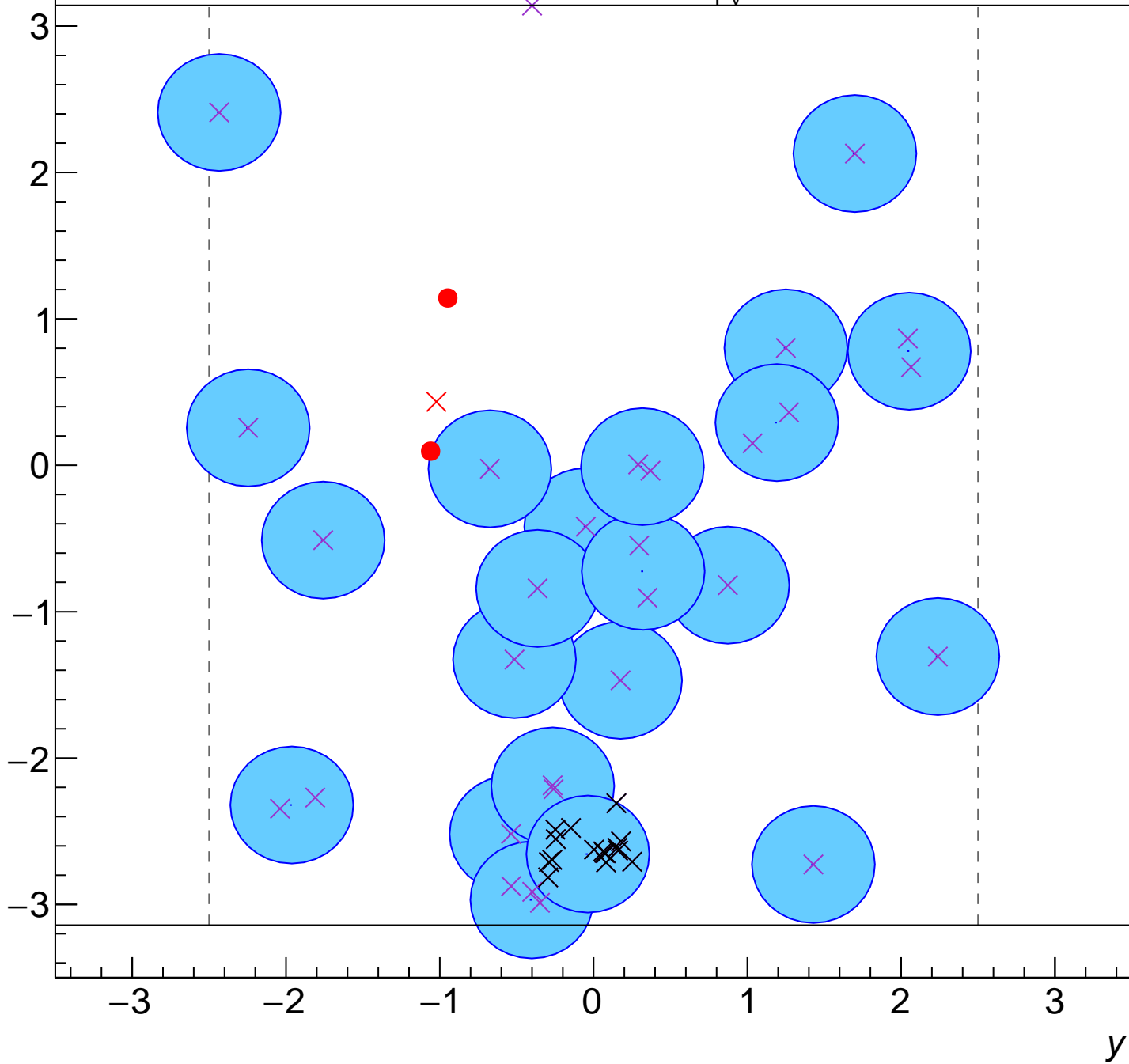
(10.4, -1.13, -1.13, 2.38), p

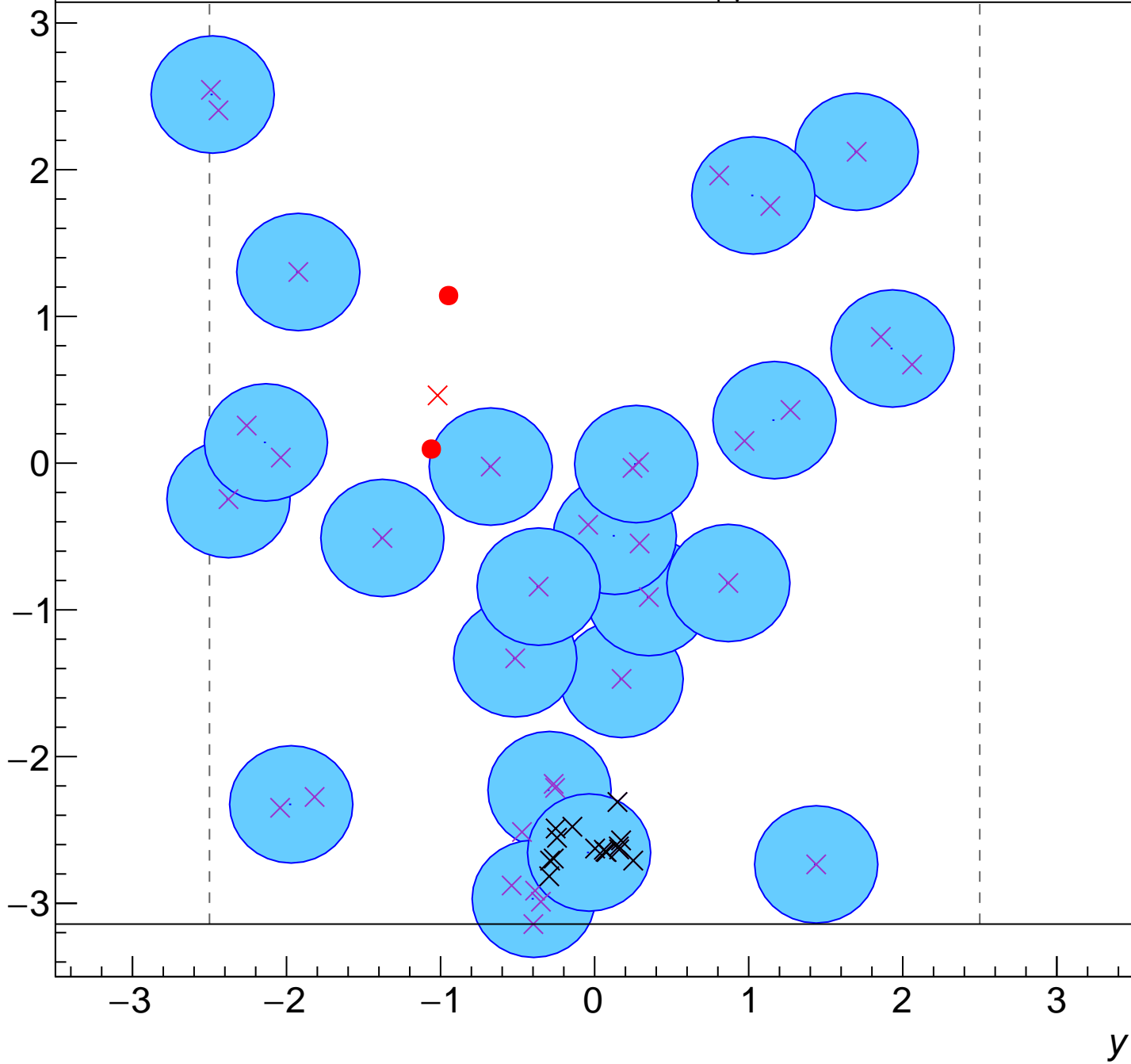
(34.1, -1.12, -1.12, 2.39), π^+

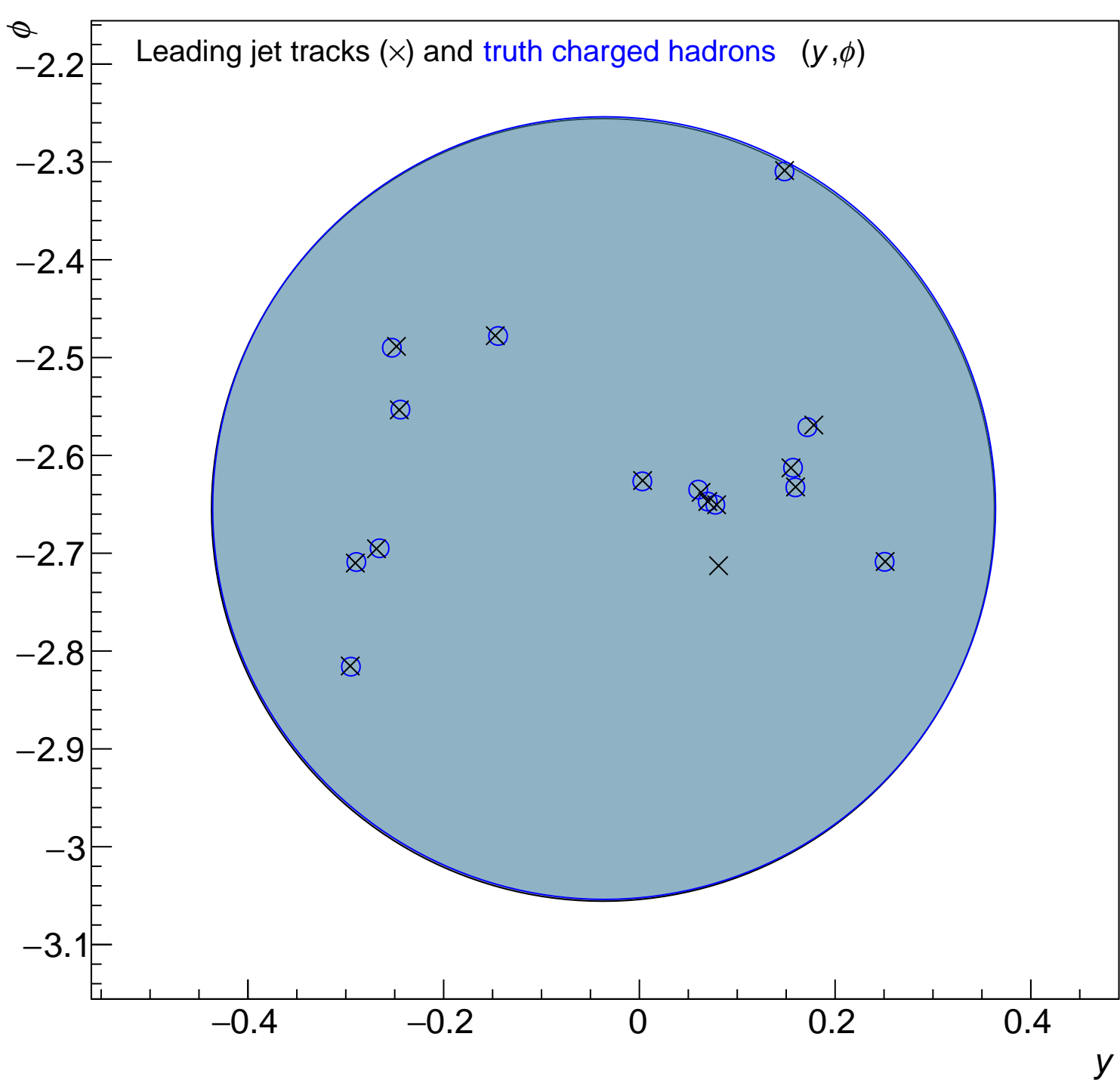
(41.5, -1.09, -1.09, 2.36), π^+

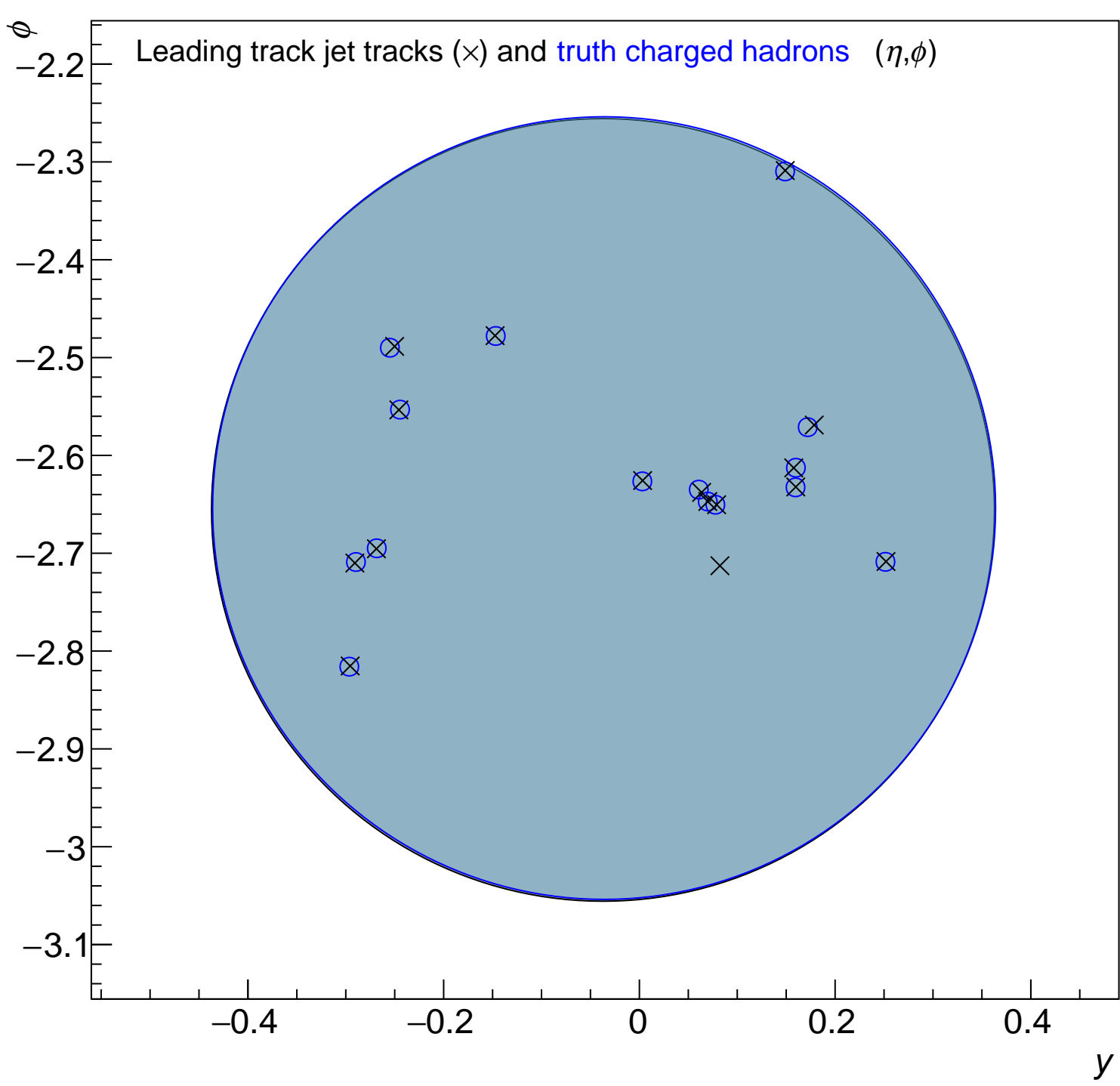
(29.2, -1.10, -1.10, 2.38), π^-

(27.2, -1.09, -1.09, 2.38), π^-

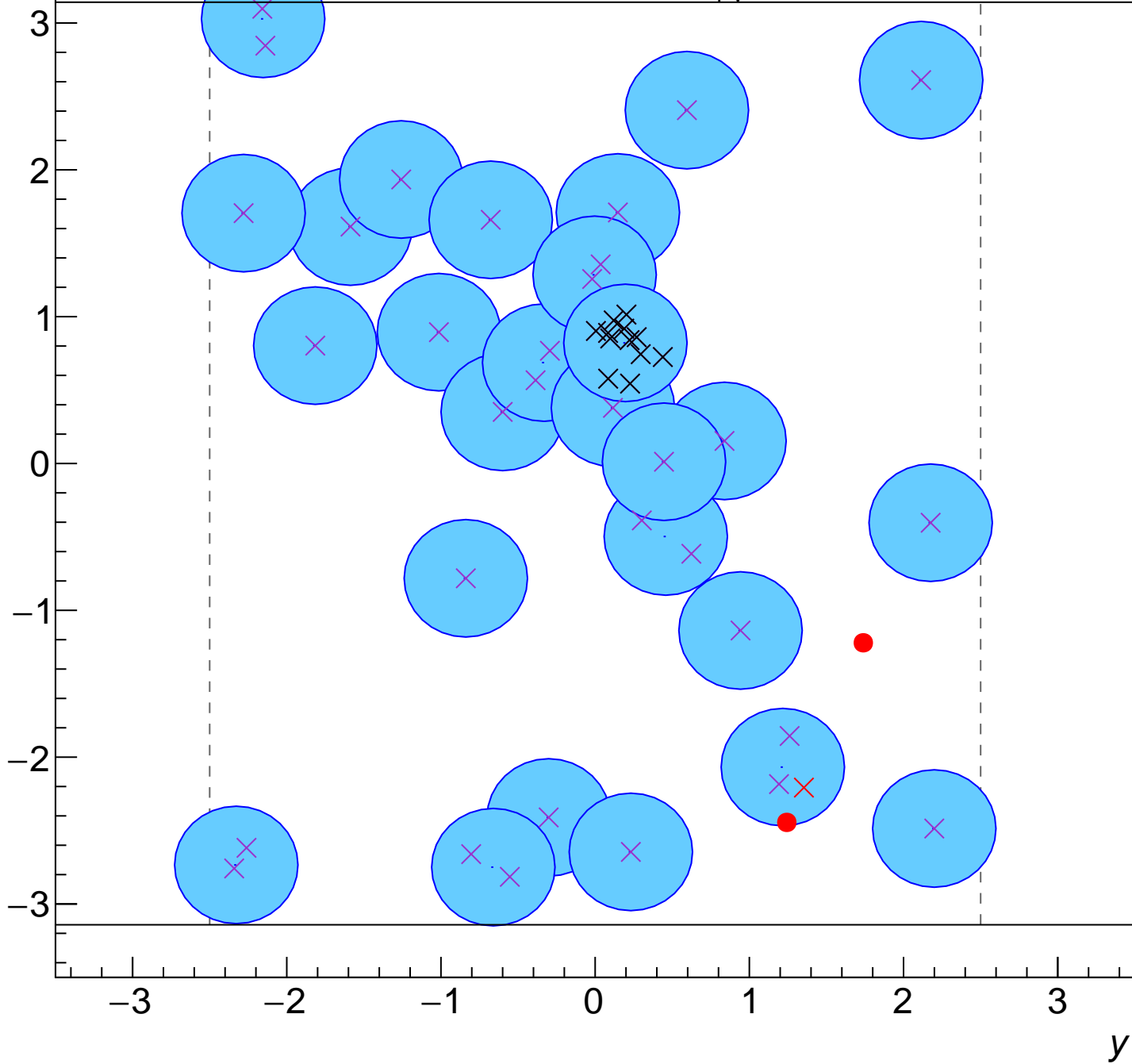
ϕ Run 300000, Event 689642062, $\mu = 32.5$, $N_{\text{PV}} = 15$, **reconstructed level**

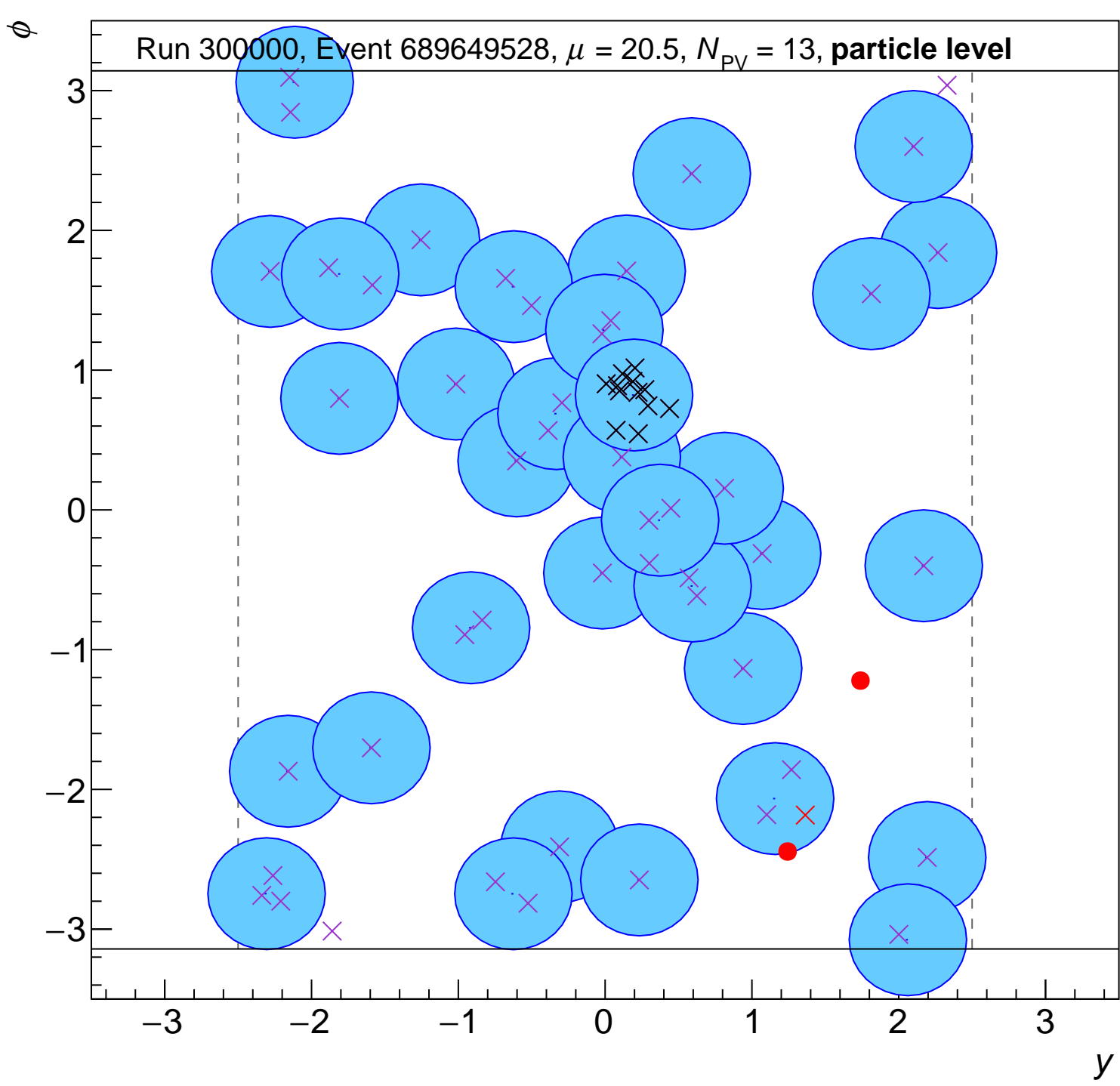
ϕ Run 300000, Event 689642062, $\mu = 32.5$, $N_{\text{PV}} = 15$, **particle level**

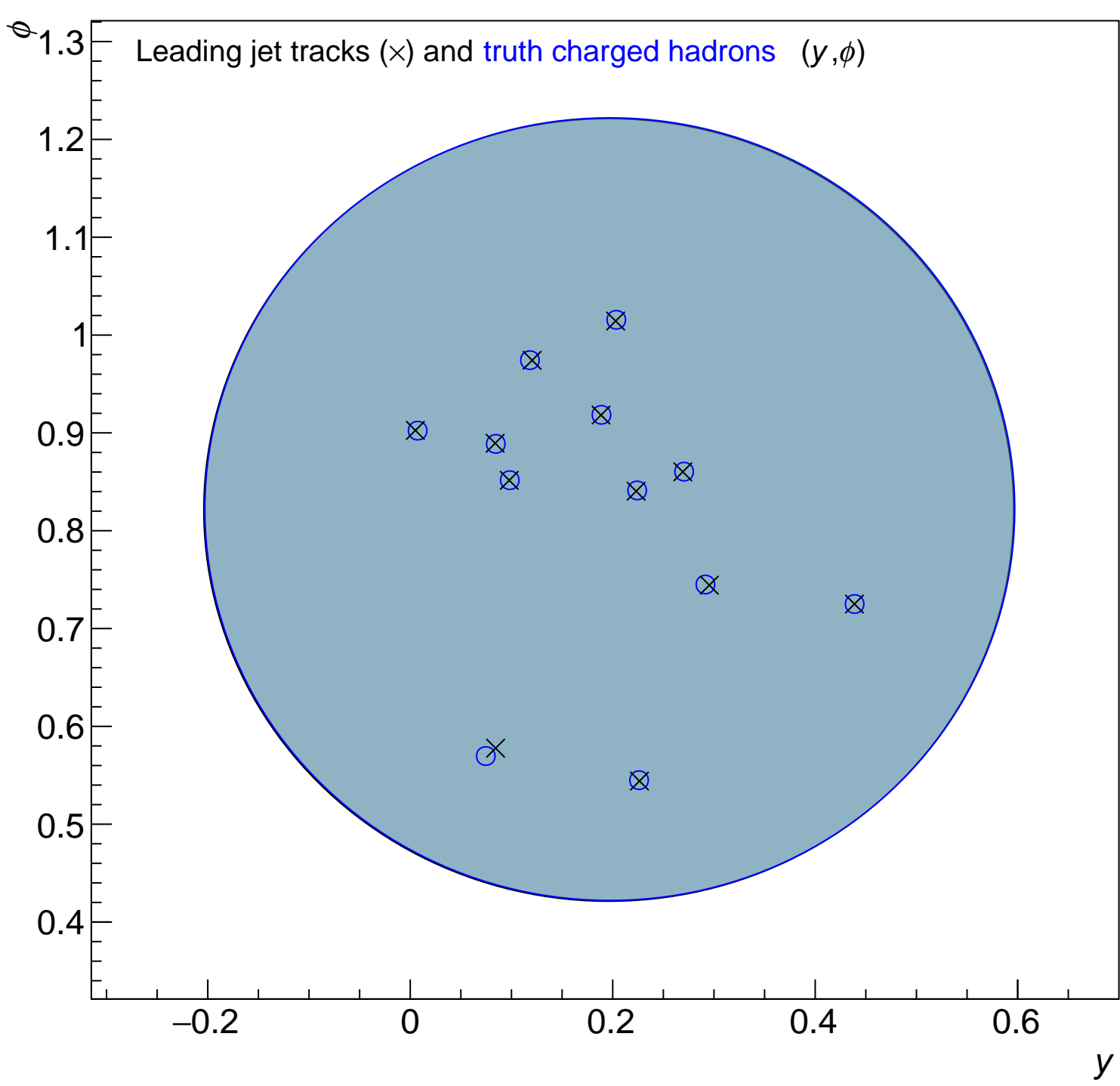


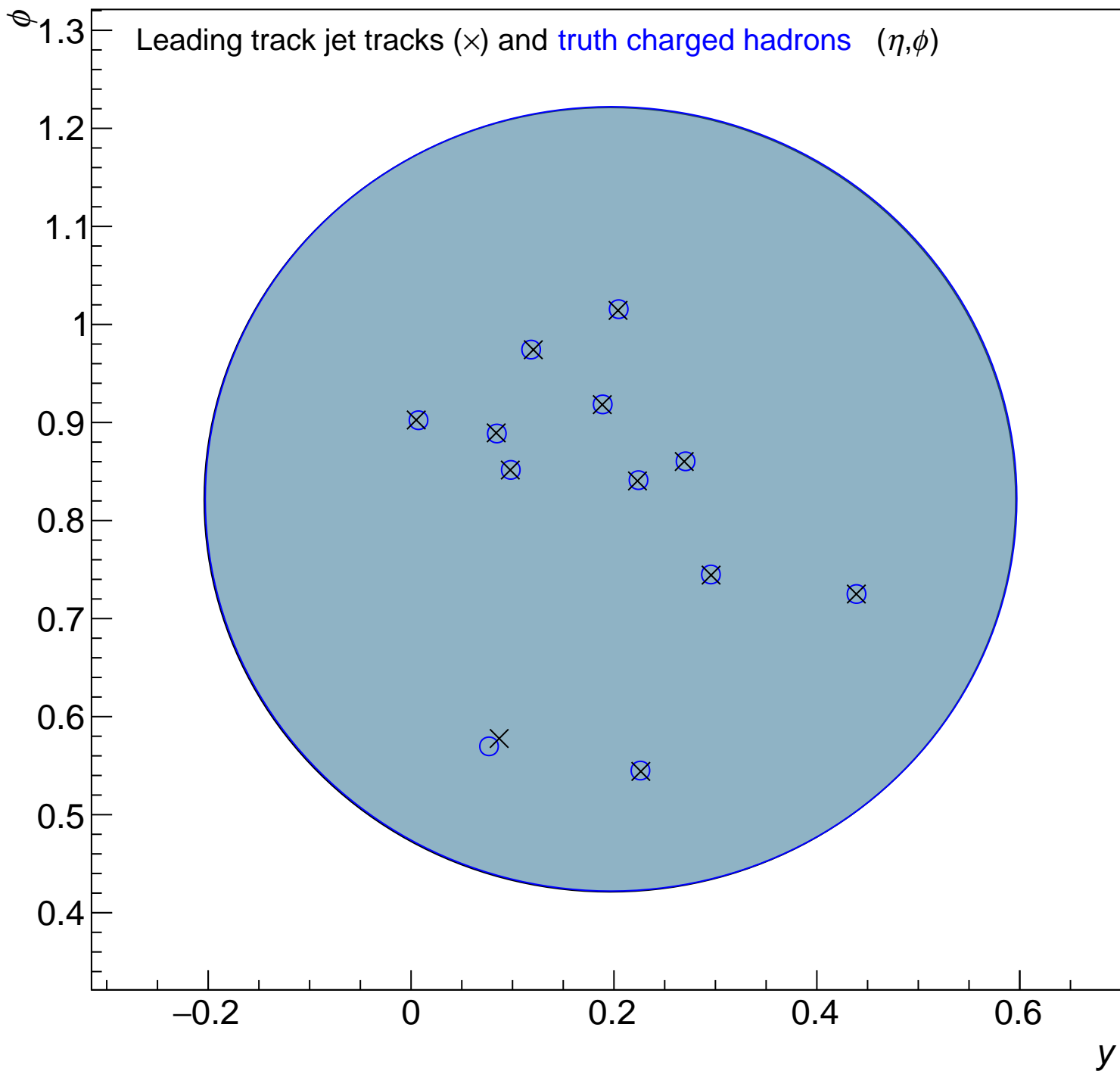


Run 300000, Event 689642062, $\mu = 32.5$, $N_{\text{PV}} = 15$	(1.2, 4.80, -1.55)
Truth ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (91.3, 165.7, -1.02)	(1.2, -4.36, -2.37)
Reco ($m_{\parallel}, p_{\text{T},\parallel}, y_{\parallel}$) = (91.2, 169.1, -1.02)	(1.1, -4.87, -2.24)
$\Delta\phi(\text{ll}, j1) = 3.09$, $\Delta R_{j1}^{\text{tru-rec}} = 0.00$	(1.1, 7.30, -0.62)
2 truth muons , ($p_{\text{T}}/\text{GeV}, y, \phi$)	(1.0, 6.66, -3.07)
(120.4, -1.06, 0.10)	(0.9, 4.50, 2.99)
(68.5, -0.95, 1.14)	(0.9, 4.45, 0.91)
2 reco muons , ($p_{\text{T}}/\text{GeV}, y, \phi$)	(0.9, -2.98, -0.30)
(127.2, -1.06, 0.10)	(0.8, -3.71, -1.32)
(64.6, -0.95, 1.14)	(0.8, -1.38, -0.51)
56 truth jets , ($p_{\text{T}}/\text{GeV}, y, \phi$)	(0.8, -0.67, -0.02)
(67.1, -0.04, -2.65)	(0.8, 0.87, -0.82)
(9.4, -4.39, 1.04)	(0.7, -2.38, -0.25)
(7.5, -0.40, -2.97)	(0.7, -5.08, -0.20)
(7.0, -0.29, -2.23)	(0.7, 3.60, -2.87)
(6.7, 1.17, 0.29)	(0.7, 0.35, -0.91)
(3.8, -2.80, 0.82)	(0.7, 5.81, 1.88)
(3.0, -6.32, 2.64)	(0.7, 1.70, 2.12)
(2.5, -2.48, 2.51)	(0.7, 2.88, -0.79)
(2.4, 5.23, 1.03)	(0.6, 2.97, -0.12)
(2.4, -1.92, 1.30)	(0.6, -0.52, -1.33)
(2.4, 0.27, -0.01)	(0.6, 1.44, -2.73)
(2.4, -2.91, -2.58)	(0.6, 3.45, 2.01)
(2.3, 1.93, 0.78)	(0.5, 2.66, -2.12)
(2.3, -3.70, -2.81)	(0.5, 4.24, -1.91)
(2.0, -1.97, -2.33)	(0.5, -4.01, -0.89)
(2.0, 3.08, 2.93)	(0.5, 0.18, -1.47)
(1.9, -4.97, 1.09)	(0.5, 6.10, 1.44)
(1.8, -3.46, 1.55)	(0.5, -8.03, 0.35)
(1.7, 3.97, -0.34)	22 reco jets , ($p_{\text{T}}/\text{GeV}, y, \phi$)
(1.6, 3.97, 1.76)	(68.1, -0.04, -2.66)
(1.6, 1.03, 1.82)	(7.5, -0.40, -2.97)
(1.6, -2.50, -2.20)	(6.7, 1.19, 0.29)
(1.6, 5.63, -2.47)	(6.0, -0.27, -2.19)
(1.5, 4.13, 1.24)	(2.4, 0.32, -0.01)
(1.4, -2.13, 0.14)	(2.4, 2.05, 0.78)
(1.4, -0.36, -0.84)	(2.0, -1.96, -2.32)
(1.3, 0.13, -0.50)	(1.5, 0.32, -0.72)
	(1.4, -0.36, -0.84)
	(0.9, 1.76, 0.51)

ϕ Run 300000, Event 689649528, $\mu = 20.5$, $N_{\text{PV}} = 13$, **reconstructed level** y







Run 300000, Event 689649528, $\mu = 20.5$, $N_{\text{PV}} = 13$

Truth (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (92.1, 150.2, 1.36)

Reco (m_{\parallel} , $p_{\text{T},\parallel}$, y_{\parallel}) = (99.8, 169.3, 1.35)

$\Delta\phi(\text{ll}, j_1) = -3.03$, $\Delta R_{j_1}^{\text{tru-rec}} = 0.00$

2 truth muons, (p_{T} /GeV, y , ϕ)

(131.1, 1.24, -2.44)

(41.2, 1.74, -1.22)

2 reco muons, (p_{T} /GeV, y , ϕ)

(150.2, 1.24, -2.44)

(42.3, 1.74, -1.22)

60 truth jets, (p_{T} /GeV, y , ϕ)

(60.1, 0.20, 0.82)

(13.8, -2.31, -2.75)

(5.7, 2.06, -3.08)

(5.5, -3.30, -2.99)

(5.4, 0.37, -0.07)

(5.0, -2.11, 3.06)

(4.7, -0.62, -2.75)

(3.1, -2.76, 0.65)

(2.9, -0.01, 1.29)

(2.7, 2.88, 0.15)

(2.4, -3.66, 0.69)

(2.3, 0.11, 0.38)

(2.2, -2.57, 2.64)

(2.0, 0.81, 0.15)

(1.9, -0.33, 0.69)

(1.8, -0.91, -0.84)

(1.7, -0.62, 1.60)

(1.6, -5.50, -2.42)

(1.6, 0.60, -0.54)

(1.6, 5.95, -0.61)

(1.6, 0.15, 1.71)

(1.6, 5.36, 0.91)

(1.5, 6.04, -1.67)

(1.5, -1.80, 1.69)

(1.5, 2.19, -2.49)

(1.5, -6.86, -0.71)

(1.4, 1.16, -2.07)

(1.3, 6.28, -2.44)

(1.3, 2.10, 2.60)

(1.3, 2.17, -0.40)

(1.2, 5.54, -1.53)

(1.2, -3.88, 1.28)

(1.2, 2.80, -0.26)

(1.1, -0.60, 0.35)

(1.1, 0.23, -2.65)

(1.0, -4.80, -1.32)

(1.0, -3.32, -0.58)

(0.9, -2.55, -0.78)

(0.9, 3.36, 2.80)

(0.9, -7.37, 0.25)

(0.9, 1.81, 1.55)

(0.8, 2.80, -2.00)

(0.7, 0.59, 2.41)

(0.7, -1.02, 0.90)

(0.7, 1.07, -0.31)

(0.7, -1.25, 1.93)

(0.7, -1.81, 0.80)

(0.7, -1.59, -1.70)

(0.7, 5.81, -2.32)

(0.6, -0.31, -2.41)

(0.6, -3.54, 2.03)

(0.6, -3.75, -2.51)

(0.6, -2.28, 1.71)

(0.5, 5.67, 2.18)

(0.5, 0.94, -1.13)

(0.5, -2.16, -1.87)

(0.5, 4.64, 2.48)

(0.5, -0.02, -0.45)

(0.5, 2.27, 1.84)

(0.5, -5.41, -0.98)

27 reco jets, (p_{T} /GeV, y , ϕ)

(60.4, 0.20, 0.82)

(11.2, -2.33, -2.73)

(4.8, -0.66, -2.75)

(3.9, -2.15, 3.03)

(2.8, 0.45, 0.01)

(2.8, 0.00, 1.28)