

TrAnalyse

TrAnalyse is the code that monitors the efficiency and ghost rate of tracks found and fitted by other routines. The output is a table of the form:

Type	Ghosts	Bad Chi2	with hits	3V+3Stations	3V+3T+>5 GeV	V+T+B-child
MC			6747	657	420	55
VeloROnly	801 30.7%	0 0.0%	1811 26.8%	641 97.6%	415 98.8%	54 98.2%
			762	339	221	31
Velo	284 15.1%	0 0.0%	1597 23.7%	616 93.8%	401 95.5%	53 96.4%
			78	35	23	2
Forward	77 11.5%	265 39.5%	594 8.8%	548 83.4%	364 86.7%	48 87.3%
			17	14	8	1
Seed	74 12.6%	2 0.3%	515 7.6%	72 11.0%	36 8.6%	4 7.3%
			2	1	1	0
Match	36 53.7%	17 25.4%	31 0.5%	21 3.2%	11 2.6%	2 3.6%
KsTrack	79 42.0%	1 0.5%	109 1.6%	25 3.8%	14 3.3%	1 1.8%
Unique Fwd	77 11.5%	263 39.2%	594 8.8%	548 83.4%	364 86.7%	48 87.3%
			5	5	2	0
Unique Mat	36 53.7%	17 25.4%	31 0.5%	21 3.2%	11 2.6%	2 3.6%
Unique Ks	60 40.0%	0 0.0%	90 1.3%	23 3.5%	14 3.3%	0 0.0%
Final	504 20.5%	285 11.6%	1951 28.9%	636 96.8%	410 97.6%	53 96.4%
			80	43	25	4
TT1 :	MC Clusters on track :	any	>0	>1	>2	>3
Forward	number of tracks :	598	566	549	532	442 2103 clus 3.52/track
Forward	with >n MC clusters :	598	336	292	99	30 757 OK 1.27/track E
Forward	some wrong clusters :	73	41	40	40	28 106 Bad 0.18/track F
Forward	efficiency (%) :	100.0	59.4	53.2	18.6	6.8
Match	number of tracks :	31	20	17	13	12 62 clus 2.00/track
Match	with >n MC clusters :	31	9	6	2	0 17 OK 0.55/track E
Match	some wrong clusters :	11	0	0	0	0 22 Bad 0.71/track F
Match	efficiency (%) :	100.0	45.0	35.3	15.4	0.0
KsTrack	number of tracks :	184	97	97	91	81 369 clus 2.01/track
KsTrack	with >n MC clusters :	184	90	89	75	61 315 OK 1.71/track Ef
KsTrack	some wrong clusters :	99	12	12	8	6 207 Bad 1.12/track Fr
KsTrack	efficiency (%) :	100.0	92.8	91.8	82.4	75.3

Track types

The code tracks the number of MC tracks that fill several categories of increasing usefulness.

Ghosts

Tracks in which less than 70% of the hits are from the same track

Bad Chi2

Tracks with poor fits, so rejected after the Kalman fit

with hits

Tracks found from MC particles leaving at least one hit a detector

3V+3Stations

Tracks found from MC particles leaving at least 3 VELO R and phi clusters and 3 T station clusters

3V+3T+>5 GeV

As above but with a true momentum of greater than 5 GeV

V+T+B-child

As 3V+3Stations and the MC truth says it was from a decay of a particle with a b quark

K0S<-B,3V3S

A Ks with at least 3 VELO R and 3 phi clusters and 3 T station clusters

clone

One of two or more tracks created from the same MC particle

Pattern Recognition Algorithms

The *type* column lists the algorithms that generated the tracks these are:

MC

Number of true MC particles fitting the category

VeloROnly

The number of 2D (r/z) VELO tracks found (not normally printed)

Velo

Number of 3D Velo tracks found, uses as seeds for later tracking stages

Forward

Long tracks found by extrapolating Velo tracks into T and TT stations and adding hits

Seed

Tracks found by pattern recognition in the T stations only

Match

Tracks found by pairing Velo and Seed tracks that extrapolate to the same point, TT hits are also added

KsTrack

tracks found by adding TT hits to seed tracks to find Ks decays after the VELO

After the different pattern recognition algorithms are run a CloneKiller is run that removes multiple copies of the same track. The tracks with the most hits and best χ^2 are kept and the others discarded. The *Unique* here refers to the fact that the clones of this track were removed.

Unique Fwd

Tracks from the Forward algorithm passing the clone killer

Unique Mat

Tracks from the Match algorithm passing the clone killer

Unique Ks

Tracks from the KsTrack algorithm passing the clone killer

Final

All tracks after the clone killer, sum of the above unique tracks

-- DavidHutchcroft - 09 Aug 2005

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