E949 PNN2 status update
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Acceptance Update

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Abstract

Reported below is the most recently measured acceptance values. Comparison to values reported in Ilektras thesis and Bipuls thesis are shown. Discrepancies in acceptances are listed and an attempt is made to explain the observed differences. Summary tables of Kpi2, Km2, and Piscat are shown with the Total acceptance for each study. Acceptance tables for each cut are provided as well.

1 Acceptance

The w/Loose Cuts column is the current measured value as of February 15th. The columns marked as Ilektra and Bipul are the values as reported in their respective dissertations; I used Bipuls 1997 values. Bipul used different samples to measure some of the cuts.

Values marked as not measured means that I could not find any indication that the acceptance of these cuts were measured. Some cuts were developed after Bipuls analysis, those cuts are marked as DNE (did not exist).

composite means that the cut was part of a larger composite cut which will be listed. When possible I try to report the acceptance of the individual cuts, so some rows will have an acceptance of 1.0 because the individual cuts have already been applied; Ilektra tended to use the larger composite cut, if they existed, instead of the individual cuts. For example, RSDEDX is a composite cut equal to rsdedxmax, rsdedxcl, rslike. The break down of these three cuts are not available from Ilektra and/or Bipul. Comparing cuts with composite will require some manual calculation.

1.1 Cut Changes

There are too many examples of changes since Bipul to note here. However, the following is a list of known changes since acceptances were measured by Ilektra for her thesis.

- **utc_qual** was loosened by Zhe. 7.8% increase
- **chi567** was loosened by Zhe. 17.1% increase.
- **chi5max** was loosened by Ilektra on 22 December 2006. 4.8% decrease, due to loosening of chi567.
- **TD neural net** was loosened by Benji. 10% difference.
- **ev5** was removed by Benji. 17% difference.
- **PVpnn2** added DSPV by Ilektra. Should have little to no effect.
- **prrf1** was loosened. Originally prrf1 cut events with stops in layer 10, now cuts events only in stops greater than 10. I observed increased of 2.0% by comparing my study before and after change.

1.2 Observed a Difference in Acceptance

Cuts which were not changed should agree with Ilektras reported results. The following cuts did not agree. When numbers are reported in this section the first number is a measurement made by me and the one in parentheses was reported in Ilektras thesis. In the tables that follow, cuts with large differences are marked in red.

1.2.1 Km2 Acceptance

- **npitg** Suspect error in Ilektras number. Should be 1.0 after applying *tgqualt*. In my opinion Ilektra used PNN1s definition of *tgqualt* which allows npitg=0,1. This does not explain the differences in the product $tgqualt \times npitg$.
- **tgqualt** 0.970737 (0.997530). I measured the acceptance loss early in the study and Ilektra applied it near the middle. I applied it first because failure to reconstruct the target can effect the validity of many other detectors quantities.
- **TGCUT** 0.971 (0.998). Again Ilektra applied this cut mid-ways thru the study. Same reasons as *tgqualt*.
- **DELCO2** 0.956 (0.987). UNSURE?
- **pigap** 0.979 (0.992) UNSURE?
- **ccdpul** 0.3006 (0.318) UNSURE?
- **TGPVTR** not measured by Ilektra, measured to be 1.0 anyway!
- PV_{online} 0.957 (0.949) UNSURE?
- PV_{pnn2} 0.6445 (0.6942). Possible Bug in routine, but observed problem doesnt explain difference

1.2.2 Kp2 Acceptance

- **TGDEDX** 0.9418 (0.922006) UNSURE?
- **tger, tgenr** 0.999814, 0.98888 were not measured by Ilektra.
- **epitg** 0.903 (0.926) UNSURE?

1.2.3 Piscat Acceptance

No unexplained differences.

1.3 Additional Info

The following is a list of things of special note.

- The acceptance of *B4tim* was measured in the $K_{\mu 2}$-Beam study and found to be **0.923** (after all other cuts).

- *ccdpul* (I define this cut in the same manner as was done in E787. i.e. ccdpul.function * ccdbadfit.function) has the largest acceptance loss with **0.301**.

- Acceptance of $UTCqual_{loose}$ is **0.917** in $K_{\mu 2}$ and **0.951** in *pi*-scats. E787 measured **0.963** for 1997 (Table 4.2 of Bipul's Thesis) using $K_{\mu 2}$, Ilektra reported **0.868** using π-scats on $UTCqual_{tight}$, E949 measured **0.931** using π-scats.

- A_{UMC} has not been remeasured. Previous value reported (IC thesis) 0.0974 ± 0.0021. For Bipul, the value was 0.0808 ± 0.001.

2 Tables

	w/ Loose Cuts	Ilektra	Bipul
Muon RD Acceptance	0.99994 ± 0.00058067	0.999941 ± 0.000005	0.9998 ± 0.00002
Muon Recon Acceptance	0.999394 ± 0.000790254	0.999995 ± 0.000002	0.9607 ± 0.0006
Muon Beam/TG Acceptance	$0.0960387 \pm 4.74405E-05$	0.105377 ± 0.000164	0.1433 ± 0.0010
Muon PV Acceptance	0.500617 ± 0.00251142	0.533731 ± 0.002345	0.3896 ± 0.0017
Muon layer14 Acceptance	0.999237 ± 0.000431548	$not \pm measured$	$not \pm measured$
Total Acceptance	$\mathbf{0.0480099 \pm 0.000431548}$	$\mathbf{0.056240 \pm 0.000262}$	$\mathbf{0.0536 \pm 0.005}$

Table 1: Km2 Acceptance Summary Table.

	w/ Loose Cuts	Ilektra	Bipul
Piscat BadStc Acceptance	0.998441 ± 0.00254466	0.998441 ± 0.000101	$notmeasured \pm 0$
Piscat Kinematic Acceptance	0.829635 ± 0.0027831	0.748804 ± 0.001696	0.8517 ± 0.0021
Piscat TD1 Acceptance	0.464328 ± 0.0013058	0.349456 ± 0.001401	0.4668 ± 0.0025
Piscat TD2 Acceptance	0.489958 ± 0.00149573	0.369592 ± 0.001555	0.4765 ± 0.0026
Total Acceptance	$\mathbf{0.384622 \pm 0.0013058}$	$\mathbf{0.269213 \pm 0.000830}$	$\mathbf{0.4904 \pm 0.0037}$

Table 2: Piscat Acceptance Summary Table.

	w/ Loose Cuts	Ilektra	Bipul
Kpi2 UTC Acceptance	0.943462 ± 0.000771198	0.943491 ± 0.000189	$measuredin \pm km2$
Kpi2 OPS Acceptance	0.974006 ± 0.00381094	0.975493 ± 0.001349	$not \pm measured$
Kpi2 TGkin Acceptance	0.650041 ± 0.00259114	0.555311 ± 0.004406	0.8115 ± 0.0020
Total Acceptance	$\mathbf{0.597347 \pm 0.00259114}$	$\mathbf{0.511091 \pm 0.004118}$	$\mathbf{0.8115 \pm 0.0020}$

Table 3: Kp2 Acceptance Summary Table.

	w/ Loose Cuts	Ilektra	Bipul
Total Acceptance	$(\mathbf{11.04 \pm 270}) \times \mathbf{10^{-4}}$	$(\mathbf{7.537 \pm 0.179}) \times \mathbf{10^{-4}}$	$(\mathbf{14.56 \pm 0.020}) \times \mathbf{10^{-4}}$

Table 4: Total Acceptance Summary Table.

2.1 $K_{\mu 2}$ cuts

Table 5: Muon RD Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$BADRUN$	5361411 (-)	- (-)	- (-)
$ictime - cktbm$	3433350 (-)	- (-)	- (-)
$icbit$	3431511 (-)	- (-)	- (-)
$b4dedx$	3328533 (-)	- (-)	- (-)
UTC	3323411 (-)	- (-)	- (-)
$TARGET$	3323411 (-)	- (-)	- (-)
utcqual Loose	**2965440** (-)	**-** (-)	**-** (-)
RD_TRK	2965440 (1)	- (1.0000)	- (1.0000)
$TRKTIM$	**2965262** (0.99994)	**-** (0.999941)	**-** (0.9998)
Total Acc.	0.99994 ± 0.00058067	0.999941 ± 0.000005	0.9998 ± 0.00002

Table 6: Muon Recon Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$BADRUN$	5361411 (-)	- (-)	- (-)
$ictime - cktbm$	3433350 (-)	- (-)	- (-)
$icbit$	3431511 (-)	- (-)	- (-)
$b4dedx$	3328533 (-)	- (-)	- (-)
$cpitrs$	3283857 (-)	- (-)	- (-)
$cpitail$	3280633 (-)	- (-)	- (-)
$cktrs$	3113831 (-)	- (-)	- (-)
$cktail$	3034092 (-)	- (-)	- (-)
$bwtrs$	2836697 (-)	- (-)	- (-)
$PVnoBV$	1599565 (-)	- (-)	- (-)
RD_TRK	1599565 (-)	- (-)	- (-)
$TRKTIM$	1599336 (-)	- (-)	- (-)
$abs(ictime - trs)$	**1599336** (-)	**-** (-)	**-** (-)
$RDUTM$	1598367 (0.999394)	- (0.99995)	- (DNE)
$TARGET$	**1598367** (1)	**-** (1.0000)	**-** (0.9969)
Total Acc.	0.999394 ± 0.000790254	0.999995 ± 0.000002	0.9607 ± 0.0006

Table 7: Muon Beam Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
BADRUN	5361411 (-)	- (-)	- (-)
icbit	5357248 (-)	- (-)	- (-)
KMU2BOX	4244126 (-)	- (-)	- (-)
cos3d	4098223 (-)	- (-)	- (-)
RD_TRK	4098223 (-)	- (-)	- (-)
TRKTIM	4098214 (-)	- (-)	- (-)
RDUTM	4098214 (-)	- (-)	- (-)
TARGET	**4098214** (-)	**-** (-)	**-** (-)
TGCUT	3978286 (0.970737)	- (0.997530)	- (unsure)
tgqualt	3768126 (0.947173)	- (0.999391)	- (1.0000)
npitg	3768126 (1)	- (0.963969)	- (1.0000)
timcon	3762516 (0.998511)	- (0.990271)	- (0.9959)
tgtcon	3721435 (0.989082)	- (0.989307)	- (DNE)
b4etcon	3684354 (0.990036)	- (0.990130)	- (DNE)
DCBIT	3245953 (0.88101)	- (0.874680)	- (0.8941)
Delco2	3102193 (0.955711)	- (0.987459)	- (0.8168)
Delc 3.0	2781030 (0.896472)	- (0.8969)	- (0.9207pnn1)
PSCUT	2636982 (0.948203)	- (0.948201)	- (0.9830)
b4dedx	2622496 (0.994507)	- (0.994543)	- (0.9944)
bwtrs	2405211 (0.917146)	- (0.917513)	- (0.9934)
cpitrs	2401150 (0.998312)	- (0.998477)	- (0.9996)
cpitail	2400029 (0.999533)	- (0.999542)	- (DNE)
cktrs	2384636 (0.993586)	- (0.994484)	- (0.9997)
cktail	2345953 (0.983778)	- (0.984502)	- (DNE)
b4trs	2285451 (0.97421)	- (0.973380)	- (0.9963)
b4ccd	2254188 (0.986321)	- (0.986150)	- (0.9951)
upvtrs	2216959 (0.983485)	- (0.982751)	- (1.000BH)
rvtrs	2214836 (0.999042)	- (composite)	- (DNE)
tggeo	2126476 (0.960105)	- (0.959114)	- (notmeasured)
b4ekz	1933227 (0.909122)	- (0.909407)	- (0.7680)
tgzfool	1909286 (0.987616)	- (0.987864)	- (0.9969)
targf	1847436 (0.967606)	- (0.968741)	- (0.9785)
dtgttp	1847429 (0.999996)	- (0.999952)	- (0.9999)
rtdif	1829735 (0.990422)	- (0.989823)	- (0.9976)
tgktim	1811670 (0.990127)	- (0.990335)	- (0.9833)
eiccon	1763029 (0.973151)	- (0.973054)	- (0.9970)
ticcon	1763024 (0.999997)	- (0.99997)	- (0.9988)
pigap	1726803 (0.979455)	- (0.991553)	- (0.9942)
tgdb4	1698715 (0.983734)	- (composite)	- (composite)
tgdb4tip	1690100 (0.994929)	- (composite)	- (composite)
tgdvxtip	1683381 (0.996024)	- (composite)	- (composite)

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Cuts	w/ Loose Cuts	Ilektra	Bipul
tgdvxpi	1646292 (0.977968)	- (composite)	- (composite)
TGB4	1646292 (1)	- (0.953158)	- (0.9609)
*phivtx*1	1597497 (0.970361)	- (0.971139)	- (0.9635)
ccdpul	480208 (0.3006)	- (0.318036)	- (0.4312)
timkf	431490 (0.898548)	- (0.896792)	- (0.9286)
verrng	402541 (0.932909)	- (0.932534)	- (0.9272)
angli	402276 (0.999342)	- (0.999393)	- (0.9999)
ALLKfit	394467 (0.980588)	- (0.980696)	- (0.9953)
tpics	393905 (0.998575)	- (0.998594)	- (0.9987)
kic	393802 (0.999739)	- (0.999737)	- (0.9993)
epionk	**393587** (0.999454)	**-** (0.999515)	**-** (0.9852)
Total Acc.	$0.0960387 \pm 4.74405E-05$	0.105377 ± 0.000164	0.1433 ± 0.0010

Table 8: Muon PV Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$BADRUN$	5361411 (-)	- (-)	- (-)
$icbit$	5357248 (-)	- (-)	- (-)
$KMU2BOX$	4244126 (-)	- (-)	- (-)
$cos3d$	4098223 (-)	- (-)	- (-)
RD_TRK	4098223 (-)	- (-)	- (-)
$TRKTIM$	4098214 (-)	- (-)	- (-)
$RDUTM$	4098214 (-)	- (-)	- (-)
$TARGET$	4098214 (-)	- (-)	- (-)
$TGCUT$	3978286 (-)	- (-)	- (-)
$tgqualt$	3768126 (-)	- (-)	- (-)
$npitg$	3768126 (-)	- (-)	- (-)
$timcon$	3762516 (-)	- (-)	- (-)
$tgtcon$	3721435 (-)	- (-)	- (-)
$b4etcon$	3684354 (-)	- (-)	- (-)
$DCBIT$	3245953 (-)	- (-)	- (-)
$Delco2$	3102193 (-)	- (-)	- (-)
$Delc$ 3.0	2781030 (-)	- (-)	- (-)
$PSCUT$	2636982 (-)	- (-)	- (-)
$b4dedx$	2622496 (-)	- (-)	- (-)
$bwtrs$	2405211 (-)	- (-)	- (-)
$cpitrs$	2401150 (-)	- (-)	- (-)
$cpitail$	2400029 (-)	- (-)	- (-)
$cktrs$	2384636 (-)	- (-)	- (-)
$cktail$	2345953 (-)	- (-)	- (-)
$b4trs$	2285451 (-)	- (-)	- (-)
$b4ccd$	2254188 (-)	- (-)	- (-)
$upvtrs$	2216959 (-)	- (-)	- (-)
$rvtrs$	2214836 (-)	- (-)	- (-)
$tggeo$	2126476 (-)	- (-)	- (-)
$b4ekz$	1933227 (-)	- (-)	- (-)
$tgzfool$	1909286 (-)	- (-)	- (-)
$targf$	1847436 (-)	- (-)	- (-)
$dtgttp$	1847429 (-)	- (-)	- (-)
$rtdif$	1829735 (-)	- (-)	- (-)
$tgktim$	1811670 (-)	- (-)	- (-)
$eiccon$	1763029 (-)	- (-)	- (-)
$ticcon$	1763024 (-)	- (-)	- (-)
$pigap$	1726803 (-)	- (-)	- (-)
$tgdb4$	1698715 (-)	- (-)	- (-)
$tgdb4tip$	1690100 (-)	- (-)	- (-)
$tgdvxtip$	1683381 (-)	- (-)	- (-)

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Cuts	w/ Loose Cuts	Ilektra	Bipul
tgdvxpi	1646292 (-)	- (-)	- (-)
TGB4	1646292 (-)	- (-)	- (-)
*phivtx*1	1597497 (-)	- (-)	- (-)
ccdpul	480208 (-)	- (-)	- (-)
timkf	431490 (-)	- (-)	- (-)
verrng	402541 (-)	- (-)	- (-)
angli	402276 (-)	- (-)	- (-)
ALLKfit	394467 (-)	- (-)	- (-)
tpics	393905 (-)	- (-)	- (-)
kic	393802 (-)	- (-)	- (-)
epionk	393587 (-)	- (-)	- (-)
$lay < 19$	**39735** (-)	**-** (-)	**-** (-)
lhex	37081 (0.933207)	- (0.933090)	- (0.9417)
HEXAfter	35702 (0.962811)	- (0.962583)	- (DNE)
PVOnline	34180 (0.957369)	- (0.949123)	- (0.9752)
*Lay*20*or*21	33914 (0.992218)	- (0.991913)	- (DNE)
STLAY	33585 (0.990299)	- (0.988946)	- (0.9828)
RSHEX	32373 (0.963912)	- (0.964459)	- (0.9504)
PVCUT	31104 (0.960801)	- (0.961588)	- (0.9779)
TGPVCUT	30864 (0.992284)	- (0.991367)	- (0.9968)
TGPVTR	30864 (1)	- (NA)	- (NA)
tgpv	30001 (0.972039)	- (composite)	- (0.8739)
ICPV	29976 (0.999167)	- (composite)	- (0.9898)
VCPV	29958 (0.9994)	- (composite)	- (0.9958)
COPV	29777 (0.993958)	- (composite)	- (0.9828)
MCPV	29774 (0.999899)	- (composite)	- (0.9998)
ECPVinner	25797 (0.866427)	- (composite)	- (0.8646)
ECPVouter	23954 (0.928558)	- (composite)	- (0.9787)
*ECPV*2*nd*	23774 (0.992486)	- (composite)	- (0.7818)
RDPV	22011 (0.925843)	- (composite)	- (0.9149)
BVPV	20437 (0.92849)	- (composite)	- (0.9419)
BVLPV	20131 (0.985027)	- (composite)	- (DNE)
ADPV	20044 (0.995678)	- (composite)	- (PbG0.9696)
earlyBVPV	20025 (0.999052)	- (composite)	- (DNE)
DSPV	20023 (0.9999)	- (composite)	- (DNE)
*PVpnn*2 *Loose*60 PVpnn2 total	**19892** (0.993458) (0.644505)	**-** (0.694200)	**-** (0.4669)
Total Acc.	0.500617 ± 0.00251142	0.533731 ± 0.002345	0.3896 ± 0.0017

Table 9: Muon layer14 Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$BADRUN$	5361411 (-)	- (-)	- (-)
$Trigger$	**5361411** (-)	**-** (-)	**-** (-)
$LAYER14$	**5357321** (0.999237)	**-** (NA)	**-** (NA)
Total Acc.	0.999237 ± 0.000431548	$not \pm measured$	$not \pm measured$

2.2 π-scat cuts

Table 10: Piscat BadStc Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$BADRUN$	5859925 (-)	- (-)	- (-)
$DUPEV$	5859925 (-)	- (-)	- (-)
RD_TRK	5859442 (-)	- (-)	- (-)
$TRKTIM$	5856748 (-)	- (-)	- (-)
$TARGET$	5856748 (-)	- (-)	- (-)
$STLAY$	4949979 (-)	- (-)	- (-)
UTC	4593392 (-)	- (-)	- (-)
$RDUTM$	4497125 (-)	- (-)	- (-)
PDC	2833580 (-)	- (-)	- (-)
$ICbit$	2833580 (-)	- (-)	- (-)
$b4abm2$	1986916 (-)	- (-)	- (-)
$tpi - trs$	1881543 (-)	- (-)	- (-)
$ictime - trs$	1847951 (-)	- (-)	- (-)
$BOX\ Loose$	378225 (-)	- (-)	- (-)
$targf$	359928 (-)	- (-)	- (-)
$dtgttp$	346686 (-)	- (-)	- (-)
$rtdif$	329173 (-)	- (-)	- (-)
$tgqualt$	292235 (-)	- (-)	- (-)
$tgzfool$	238277 (-)	- (-)	- (-)
$cktrs$	224977 (-)	- (-)	- (-)
$cktail$	222668 (-)	- (-)	- (-)
$cos3d$	206538 (-)	- (-)	- (-)
$layv4$	206518 (-)	- (-)	- (-)
$RDPV$	**153952** (-)	**-** (-)	**-** (-)
BAD_STC	**153712** (0.998441)	**-** (0.998441)	**-** (notmeasured)
Total Acc.	0.998441 ± 0.00254466	0.998441 ± 0.000101	$notmeasured \pm 0$

Table 11: Piscat Kinematic Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
SetupBadStC	153952 (-)	- (-)	- (-)
BAD_STC	153712 (-)	- (-)	- (-)
$piflg$	121687 (-)	- (-)	- (-)
$ev502\ off$	121687 (-)	- (-)	- (-)
elveto	107329 (-)	- (-)	- (-)
$tdfool$	102858 (-)	- (-)	- (-)
$tdvarnn02$ *Loose*	88862 (-)	- (-)	- (-)
TD *Loose*	**88862** (-)	**-** (-)	**-** (-)
utcqual Loose	84504 (0.950958)	- (0.872660)	- (0.9637)
$rngmom$	82979 (0.981954)	- (0.984926)	- (0.9225)
$rsdedxmax$	80576 (0.971041)	- (composite)	- (0.9938)
$rsdedxcl$	76945 (0.954937)	- (composite)	- (0.9755)
$rslike$	76945 (1)	- (composite)	- (DNE)
RSDEDX	76945 (1)	- (0.923704)	- (0.0)
$prrf1$	76314 (0.991799)	- (composite)	- (0.9959)
$prrfz$	73723 (0.966048)	- (composite)	- (0.9559)
PRRF	73723 (1)	- (0.927226)	- (0.0)
$icodel14$	**73723** (1)	**-** (1.000000)	**-** (notmeasured)
Total Acc.	0.829635 ± 0.0027831	0.748804 ± 0.001696	0.8517 ± 0.0021

Table 12: Piscat TD1 Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$BADRUN$	5859925 (-)	- (-)	- (-)
$DUPEV$	5859925 (-)	- (-)	- (-)
RD_TRK	5859442 (-)	- (-)	- (-)
$TRKTIM$	5856748 (-)	- (-)	- (-)
$TARGET$	5856748 (-)	- (-)	- (-)
$STLAY$	4949979 (-)	- (-)	- (-)
UTC	4593392 (-)	- (-)	- (-)
$RDUTM$	4497125 (-)	- (-)	- (-)
PDC	2833580 (-)	- (-)	- (-)
$ICbit$	2833580 (-)	- (-)	- (-)
$b4abm2$	1986916 (-)	- (-)	- (-)
$tpi - trs$	1881543 (-)	- (-)	- (-)
$ictime - trs$	1847951 (-)	- (-)	- (-)
$BOX\ Loose$	378225 (-)	- (-)	- (-)
$targf$	359928 (-)	- (-)	- (-)
$dtgttp$	346686 (-)	- (-)	- (-)
$rtdif$	329173 (-)	- (-)	- (-)
$tgqualt$	292235 (-)	- (-)	- (-)
$tgzfool$	238277 (-)	- (-)	- (-)
$cktrs$	224977 (-)	- (-)	- (-)
$cktail$	222668 (-)	- (-)	- (-)
$cos3d$	206538 (-)	- (-)	- (-)
$layv4$	206518 (-)	- (-)	- (-)
$RDPV$	153952 (-)	- (-)	- (-)
BAD_STC	153712 (-)	- (-)	- (-)
$rngmom$	143115 (-)	- (-)	- (-)
$zfrf$	143047 (-)	- (-)	- (-)
$zutout$	142893 (-)	- (-)	- (-)
$LAYER14$	142892 (-)	- (-)	- (-)
$utcqual\ Loose$	136120 (-)	- (-)	- (-)
$eiccon$	**126443** (-)	**-** (-)	**-** (-)
$piflg$	104223 (0.824269)	- (0.825535)	- (0.6973)
$RSHEX2$	102291 (0.981463)	- (0.981471)	- (1.000)
$Lev1.1$	82791 (0.809367)	- (0.810259)	- (composite)
$Lev1.2$	69497 (0.839427)	- (0.840425)	- (L1.n0.7645)
$TDCUT$	65304 (0.939666)	- (0.940168)	- (notmeasured)
$elveto$	62542 (0.957706)	- (0.957895)	- (0.9749)
$tdfool$	62325 (0.99653)	- (0.996965)	- (0.9975)
$tdvarnn02\ Loose$	58711 (0.942014)	- (0.849444)	- (0.9316)
$ev502\ off$	58711 (1)	- (0.830461)	- (0.9874)
TD *Loose*	**58711** (1)	**-** (composite)	**-** (composite)

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Cuts	w/ Loose Cuts	Ilektra	Bipul
Total Acc.	0.464328 ± 0.0013058	0.349456 ± 0.001401	0.4668 ± 0.0025

Table 13: Piscat TD2 Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$SetupTD1$	126443 (-)	- (-)	- (-)
RSDEDX	112572 (-)	- (-)	- (-)
PRRF	**107303** (-)	**-** (-)	**-** (-)
$piflg$	90309 (0.841626)	- (0.825535)	- (0.6973)
$RSHEX2$	88766 (0.982914)	- (0.981471)	- (1.000)
$Lev1.1$	72676 (0.818737)	- (0.810259)	- (composite)
$Lev1.2$	62034 (0.853569)	- (0.840425)	- (L1.n0.7645)
$TDCUT$	58404 (0.941484)	- (0.940168)	- (notmeasured)
$elveto$	55949 (0.957965)	- (0.957895)	- (0.9749)
$tdfool$	55771 (0.996819)	- (0.996965)	- (0.9975)
$tdvarnn02$ *Loose*	52574 (0.942676)	- (0.849444)	- (0.9316)
$ev502\ off$	52574 (1)	- (0.830461)	- (0.9874)
TD *Loose*	**52574** (1)	**-** (composite)	**-** (composite)
Total Acc.	0.489958 ± 0.00149573	0.369592 ± 0.001555	0.4765 ± 0.0026

2.3 $K_{\pi 2}$ cuts

Table 14: Kpi2 UTC Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$BADRUN$	1906144 (-)	- (-)	- (-)
RD_TRK	1906092 (-)	- (-)	- (-)
$TRKTIM$	1905292 (-)	- (-)	- (-)
$STLAY$	1501487 (-)	- (-)	- (-)
BAD_STC	1496639 (-)	- (-)	- (-)
$TARGET$	**1496639** (-)	**-** (-)	**-** (-)
UTC	1412022 (0.943462)	- (0.943491)	- (1.0000)
$UTC1$	**1412022** (1)	**-** (NA)	**-** (NA)
Total Acc.	0.943462 ± 0.000771198	0.943491 ± 0.000189	$measuredin \pm km2$

Table 15: Kpi2 OPS Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
$BADRUN$	1906144 (-)	- (-)	- (-)
$DUPEV$	1906144 (-)	- (-)	- (-)
$TRIGGER$	1906144 (-)	- (-)	- (-)
RD_TRK	1906092 (-)	- (-)	- (-)
$TRKTIM$	1905292 (-)	- (-)	- (-)
$TARGET$	1905292 (-)	- (-)	- (-)
$STLAY$	1501487 (-)	- (-)	- (-)
UTC	1416611 (-)	- (-)	- (-)
$RDUTM$	1406309 (-)	- (-)	- (-)
BAD_STC	1401758 (-)	- (-)	- (-)
PDC	1362849 (-)	- (-)	- (-)
$b4dedx$	1305734 (-)	- (-)	- (-)
$bwtrs$	1157776 (-)	- (-)	- (-)
$b4trs$	1083075 (-)	- (-)	- (-)
$b4etcon$	1074661 (-)	- (-)	- (-)
$b4ccd$	1060322 (-)	- (-)	- (-)
$cpitrs$	1054643 (-)	- (-)	- (-)
$cpitail$	1054176 (-)	- (-)	- (-)
$cktrs$	853425 (-)	- (-)	- (-)
$cktail$	814212 (-)	- (-)	- (-)
$tgqualt$	751102 (-)	- (-)	- (-)
$timcon$	745100 (-)	- (-)	- (-)
$tgtcon$	737404 (-)	- (-)	- (-)
$rvtrs$	735808 (-)	- (-)	- (-)
$upvtrs$	723294 (-)	- (-)	- (-)
$Delc$ 3.0	645921 (-)	- (-)	- (-)
$tggeo$	554101 (-)	- (-)	- (-)
PSCut06	554101 (-)	- (-)	- (-)
$icodel14$	551720 (-)	- (-)	- (-)
$cos3d$	501005 (-)	- (-)	- (-)
$layv4$	500946 (-)	- (-)	- (-)
$zfrf$	487709 (-)	- (-)	- (-)
$zutout$	486868 (-)	- (-)	- (-)
FIDUCIAL	486868 (-)	- (-)	- (-)
$utcqual\ Loose$	460420 (-)	- (-)	- (-)
$prrf1$	358355 (-)	- (-)	- (-)
$prrfz$	311538 (-)	- (-)	- (-)
PRRF	311538 (-)	- (-)	- (-)
$rsdedxmax$	270318 (-)	- (-)	- (-)
$rsdedxcl$	233622 (-)	- (-)	- (-)
$rslike$	224867 (-)	- (-)	- (-)

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Cuts	w/ Loose Cuts	Ilektra	Bipul
RSDEDX	224867 (-)	- (-)	- (-)
rngmom	164160 (-)	- (-)	- (-)
Kincut06	164160 (-)	- (-)	- (-)
*tgdb*4	160655 (-)	- (-)	- (-)
*tgdb*4*tip*	158034 (-)	- (-)	- (-)
tgdvxtip	156680 (-)	- (-)	- (-)
tgdvxpi	151784 (-)	- (-)	- (-)
TGB4	151784 (-)	- (-)	- (-)
piflg	124575 (-)	- (-)	- (-)
tdfool	114701 (-)	- (-)	- (-)
*tdvarnn*02 *Loose*	98059 (-)	- (-)	- (-)
*b*4*ekz*	90901 (-)	- (-)	- (-)
dtgttp	90896 (-)	- (-)	- (-)
kic	90866 (-)	- (-)	- (-)
*phivtx*1	87258 (-)	- (-)	- (-)
rtdif	86638 (-)	- (-)	- (-)
eiccon	85142 (-)	- (-)	- (-)
targf	82795 (-)	- (-)	- (-)
ticcon	82780 (-)	- (-)	- (-)
pigap	81220 (-)	- (-)	- (-)
tgzfool	80226 (-)	- (-)	- (-)
tgktim	79453 (-)	- (-)	- (-)
timkf	70130 (-)	- (-)	- (-)
*Kpi*2*Box*	**65322** (-)	**-** (-)	**-** (-)
opsveto	**63624** (0.974006)	**-** (0.975493)	**-** (notmeasured)
Total Acc.	0.974006 ± 0.00381094	0.975493 ± 0.001349	$not \pm measured$

Table 16: Kpi2 TGkin Acceptance Branch no. 1

Cuts	w/ Loose Cuts	Ilektra	Bipul
SetupOPS	65322 (-)	- (-)	- (-)
opsveto	63624 (-)	- (-)	- (-)
TGPVCUT	**62936** (-)	**-** (-)	**-** (-)
rtghi	62800 (0.997839)	- (composite)	- (composite)
etghi	61493 (0.979188)	- (composite)	- (composite)
*tgdedx*1	59419 (0.966273)	- (composite)	- (composite)
*tgdedx*2	59276 (0.997593)	- (composite)	- (composite)
TGDEDX total TGDEDX	59276 (1) (0..9418)	- (0.922006)	- (0.9858)
tger	59265 (0.999814)	- (notmeasured)	- (1.0000)
tgenr	58606 (0.98888)	- (notmeasured)	- (0.9719)
*tglike*1	57584 (0.982562)	- (composite)	- (composite)
*tglike*2	56670 (0.984128)	- (composite)	- (composite)
TGLIKE	56670 (1)	- (0.966732)	- (1.0000)
epitg	51182 (0.903159)	- (0.925792)	- (0.9638)
epimaxk	51182 (1)	- (1.000000)	- (1.0000)
tgedge	50909 (0.994666)	- (0.995139)	- (0.9992)
drp	50818 (0.998212)	- (0.997414)	- (0.9998)
*chi*567 *Loose*	43874 (0.863356)	- (0.691569)	- (0.8400)
*chi*5*max*	**40911** (0.932466)	**-** (0.980700)	**-** (0.9799)
Total Acc.	0.650041 ± 0.00259114	0.555311 ± 0.004406	0.8115 ± 0.0020