CEX background estimate (Oct. 13, 2006)

- Strategy
- Normalization branch in data
- Rejection or acceptance from UMC
- Number of background

Strategy

- Select normalization branch in data
- Invert: Targf (kpigap)
- And turn off some cuts
- Evaluate Rejection of kpigap and Acceptance of unapplied cuts with UMC

Data sample 1

- Invert targf (apply kpi_gap)
- Turn off these cuts:

  DELCO, TGPV, OPSVETO, DRP, PHIVTX1, PHIVTX2, B4EKZ, TGB4, EPITG, EPIMAX, CHI567, CHI5MAX and VERRNG

- 24 evevts survive

Category of data sample 1

- back to back 1, 9 events (two opposite RS clusters, Δt=4 ns) removed
- back to back 2, 5 events (one track ends in RS, the other one leaves dector)
- back to back 3, 3 events (one track ends in RS, the other one ends in dector, i.e. TG, UTC, but not RS)
- overlapped pion fibers, 5 events (some pion fibers are overlapped with PV fibers)
- cex like, 2 events

data sample 2 (subset of 1)

- Invert targf (apply kpi_gap)
- Unapplied cuts:
  - DELCO, TGPV, OPSVETO, DRP, PHIVTX1, PHIVTX2 (acceptance is estimated)
  - CHI567, CHI5MAX and VERRNG
  - ANGLI, EPIONk TGFITALLK, TIC (Not simulated, and no rejection for sample 1)

History of CEX normaliztion branch 1/3

Cut	Events (Acc)
all	30847704. (1.00000)
bad_run	30262340. (0.98102)
skim1 or 5	7585888. (0.25067)
fix_all	7585888. (1.00000)
cos3d	6794014. (0.89561)
zfrf	6362550. (0.93649)
zutout	6351267. (0.99823)
rsdedx	4253324. (0.66968)
utcqual	3520014. (0.82759)
rngmom	1763235. (0.50092)
prrf	1492763. (0.84660)
box2	372417. (0.24948)
b4dedx	361524. (0.97075)
bwtrs	312222. (0.86363)
b4t_rs	289553. (0.92739)
b4ccd	286217. (0.98848)
ckt_rs	188133. (0.65731)

History of CEX normaliztion branch 2/3

Cut	Events (Acc)
cpit_rs	180420. (0.95900)
timcon	176465. (0.97808)
rshex2_tight	176337. (0.99927)
elveto_new02	164008. (0.93008)
ifail_tdfool	163665. (0.99791)
ev5_02	135148. (0.82576)
tdvarnn02	111516. (0.82514)
pvcut02_new (90%, no tgpv)	9120. (0.08178)
kpi_gap	406. (0.04452)
b4tim	291. (0.71499)
b4ekz	141. (0.48454)
tgzfool	141. (1.00000)
epitg	129. (0.91489)
epitg_max	119. (0.92248)
tger	118. (0.99160)
dtgttp	118. (1.00000)
rtdif	118. (1.00000)

History of CEX normaliztion branch 3/3

Cut	Events (Acc)
tgktim	91. (0.77119)
eiccon	85. (0.93407)
tgedge	81. (0.95294)
tgdedx	61. (0.75309)
tgenr	61. (1.00000)
pi_gap	61. (1.00000)
tglike	44. (0.72131)
tgb4	23. (0.52273)
timkf	20. (0.86957)
cddpul	10. (0.50000)
npitg	10. (1.00000)
kic	8. (0.80000)

Six: back to back 1
Two cex candidates: normalization

Rejection & acceptance estimate

- CEX, muon channel
- Inverted targf (kpigap): rejection estimated
- Unapplied:
  - DELCO, TGPV, OPSVETO, DRP, PHIVTX1, PHIVTX2 (acceptance estimated)
  - CHI567, CHI5MAX and VERRNG (not estimated)
  - ANGLI, EPIONk TGFITALLK, TIC (not simulated, not estimated)
  - B4TIM, B4EKZ, TGKTIM, TGEDGE, TIMKF, CCDPUL (not simulated, used in data, believed they won't cause bias to the rejection and acceptance estimate)

Rejection & acceptance estimate

$$N_{cex} = N_{data} \times \frac{1}{(R_{kpigap} - 1)} \times Acc_{unapplied}$$

- $R_{kpigap} = 1.26$

N_{cex} ($\pm 70\%$ sta.)	delco2	3	4	5	6
tgpv&opsveto	0.16	0.075	0.043	0.027	0.018
tgpv&opsveto&drp& phivtx1&phivtx2	0.12	0.055	0.032	0.019	0.012

- Not considered: CHI567, CHI5MAX, VERRNG;
  ANGLI, EPIONK, TGFITALLK, TIC