

CT / DCCT ratio during MR Run40~42

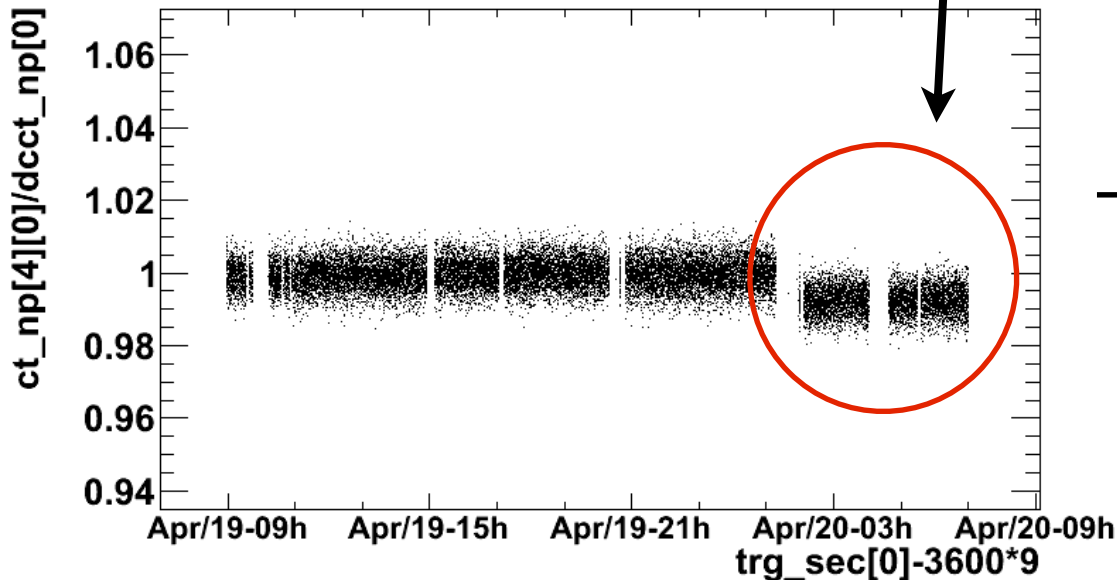
A.Murakami

- Calc the each CT / DCCT by using beam data in MR Run40~42 physics run.
- We can calc this ratio for other run period, but take more and more time to process.
- Tentatively, I calc the physics run data in MR Run40~42

Bug

At beam pre-meeting in last collabo, I found the ratio of CT5/DCCT changed in a halfway of physics run.

Proton per pulse ratio of CT05/DCCT

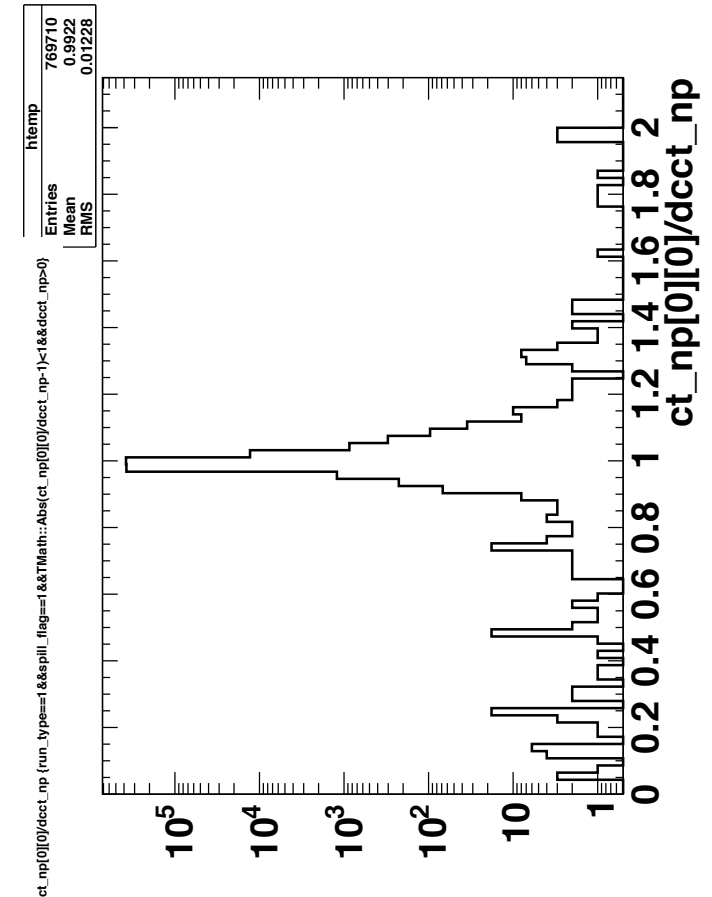
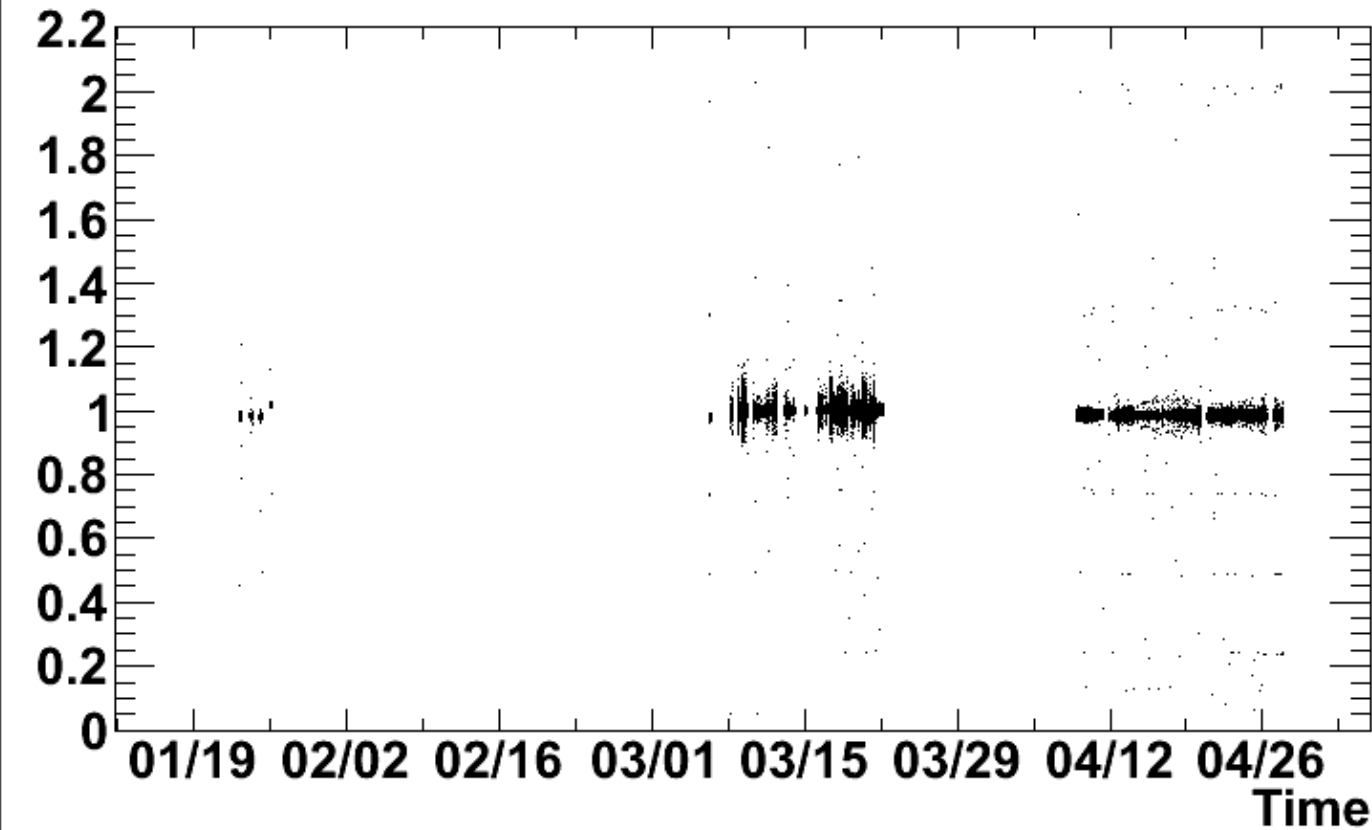


**This “DCCT” is not DCCT
→ This is “MRCT” (different
from “DCCT”)**

After bug fix, the CT5/DCCT ratio become to be stable (not change halfway)

CTI/DCCT

0][0]/dcct_np: CTI/DCCT lath::Abs(ct_np[4][0]/dcct_np-1)<1&&dcct_np>0}

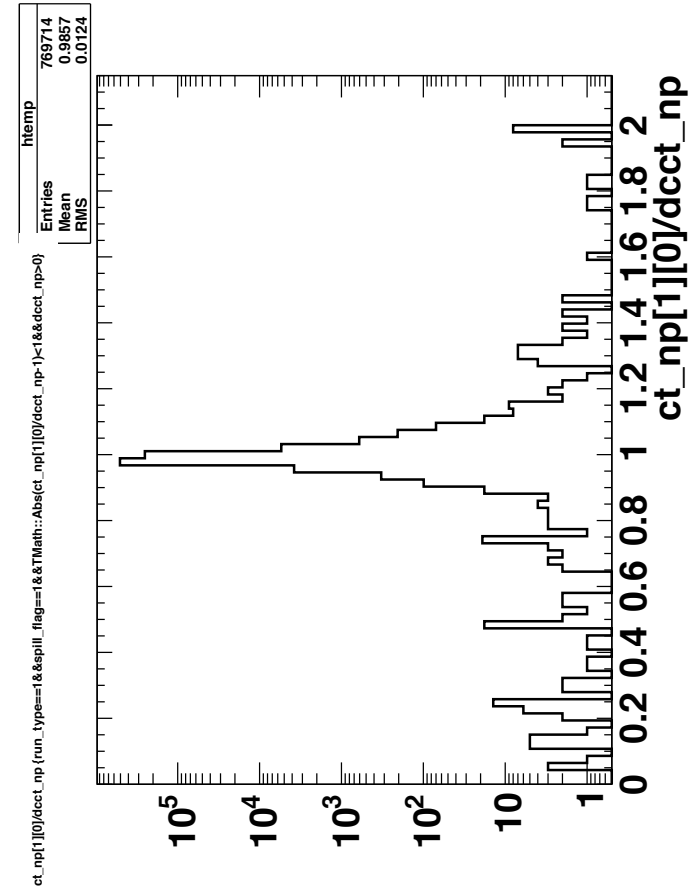
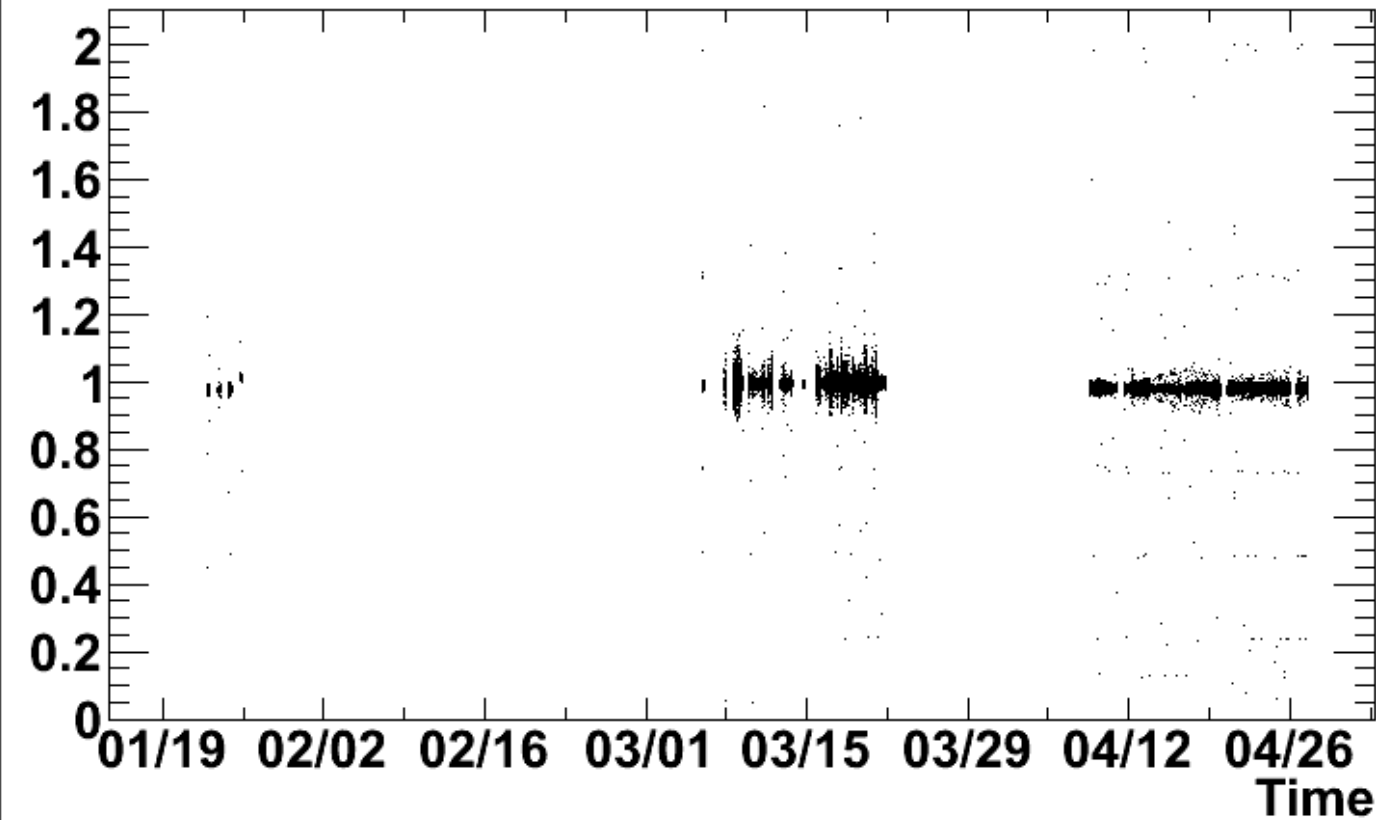


Mean=0.992, RMS=0.0123
RMS/Mean=1.24%

CT2/DCCT

ct_np[1][0]/dcct_np[1][0] < 1 && dcct_np > 0

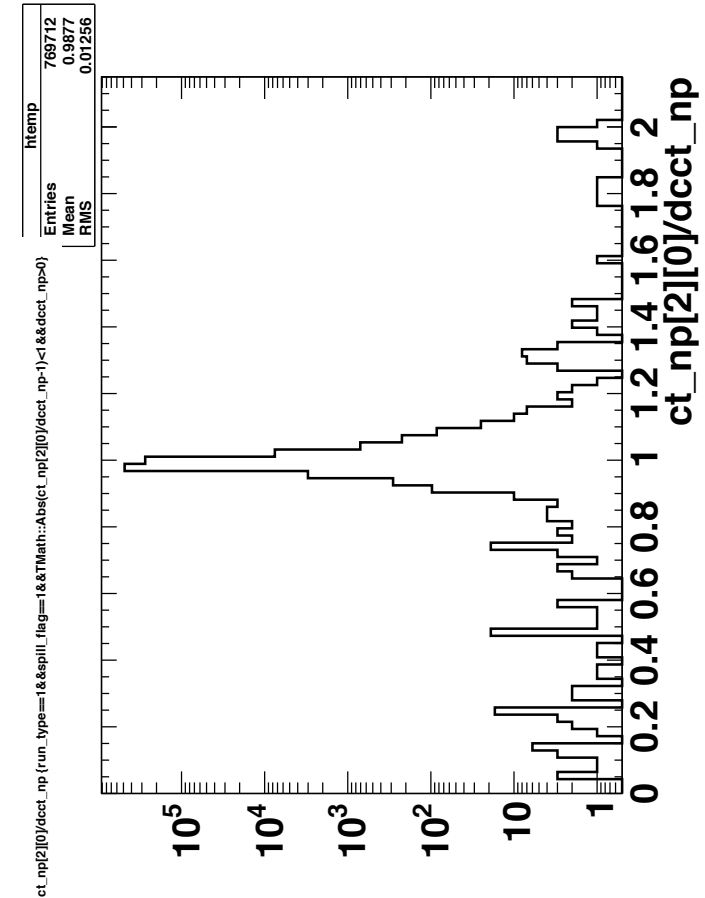
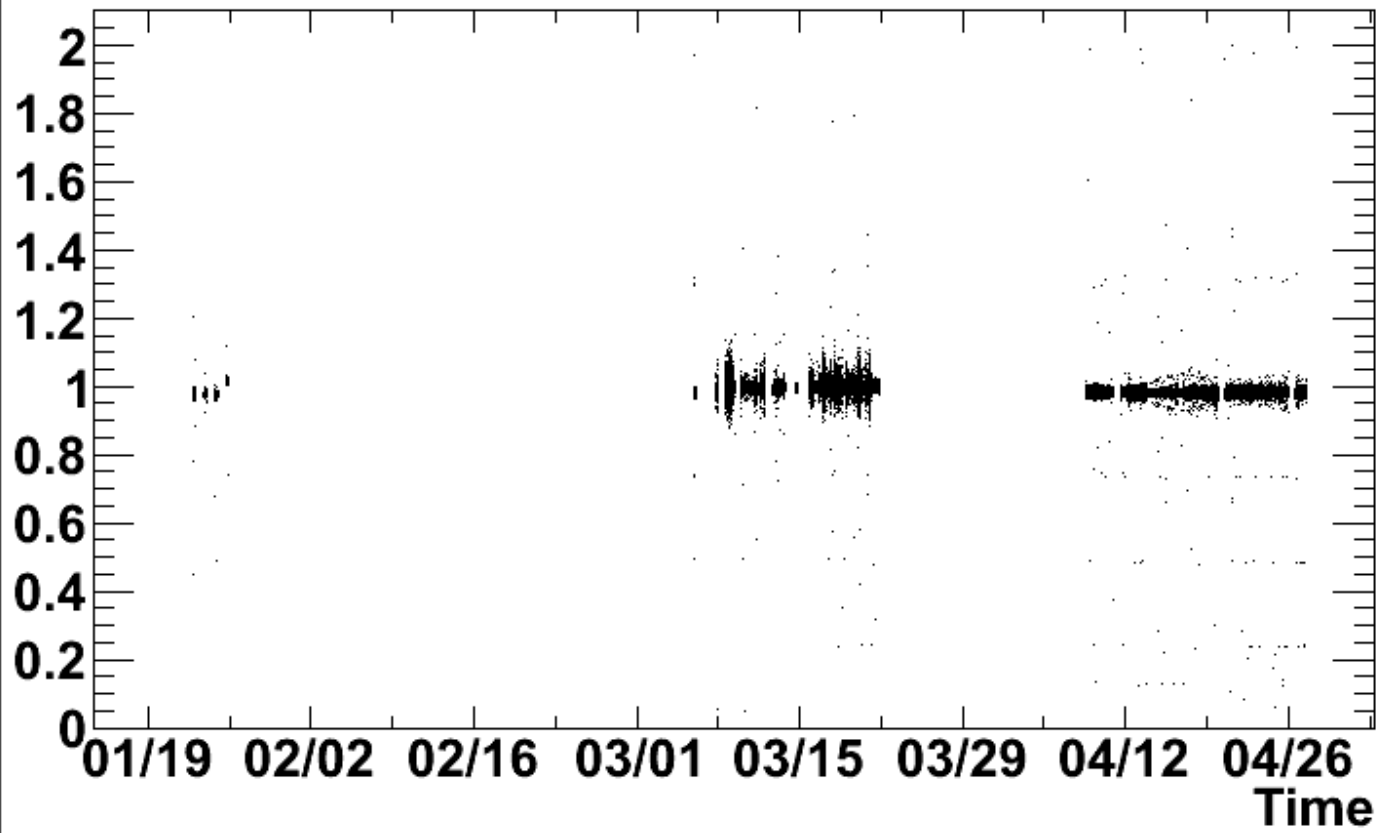
CT2/DCCT



Mean=0.986, RMS=0.0124
RMS/Mean=1.26%

CT3/DCCT

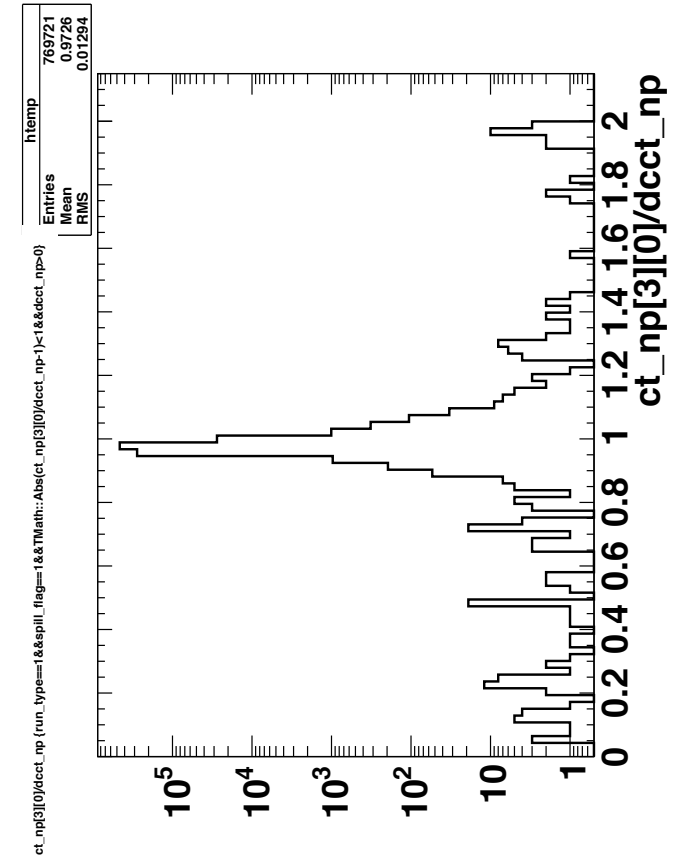
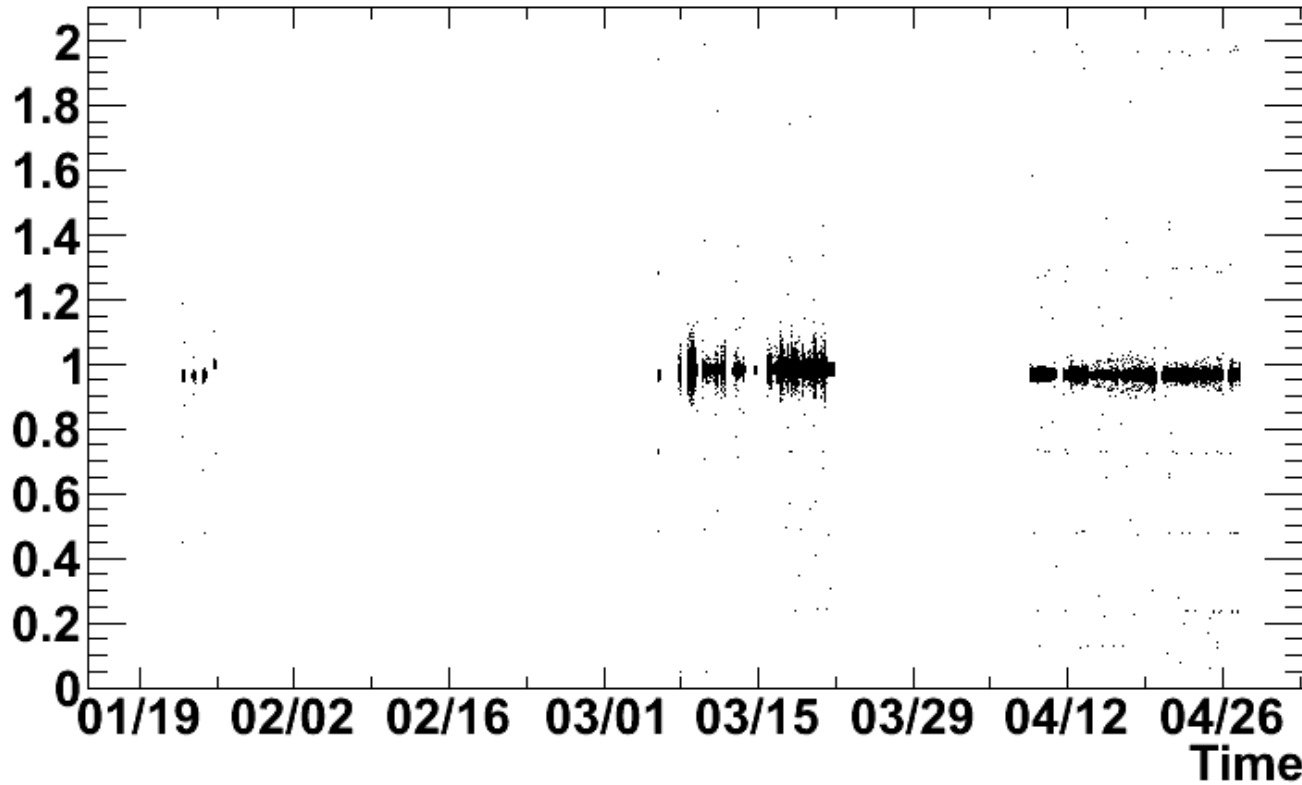
0]/dcct_np:{tri| **CT3/DCCT** TMath::Abs(ct_np[2][0]/dcct_np-1)<1&&dcct_np>0}



Mean=0.988, RMS=0.0126
RMS/Mean=1.28%

CT4/DCCT

ct_np[3][0]/dcct_ &&TMath::Abs(ct_np[3][0]/dcct_np-1)<1&&dcct_np>0

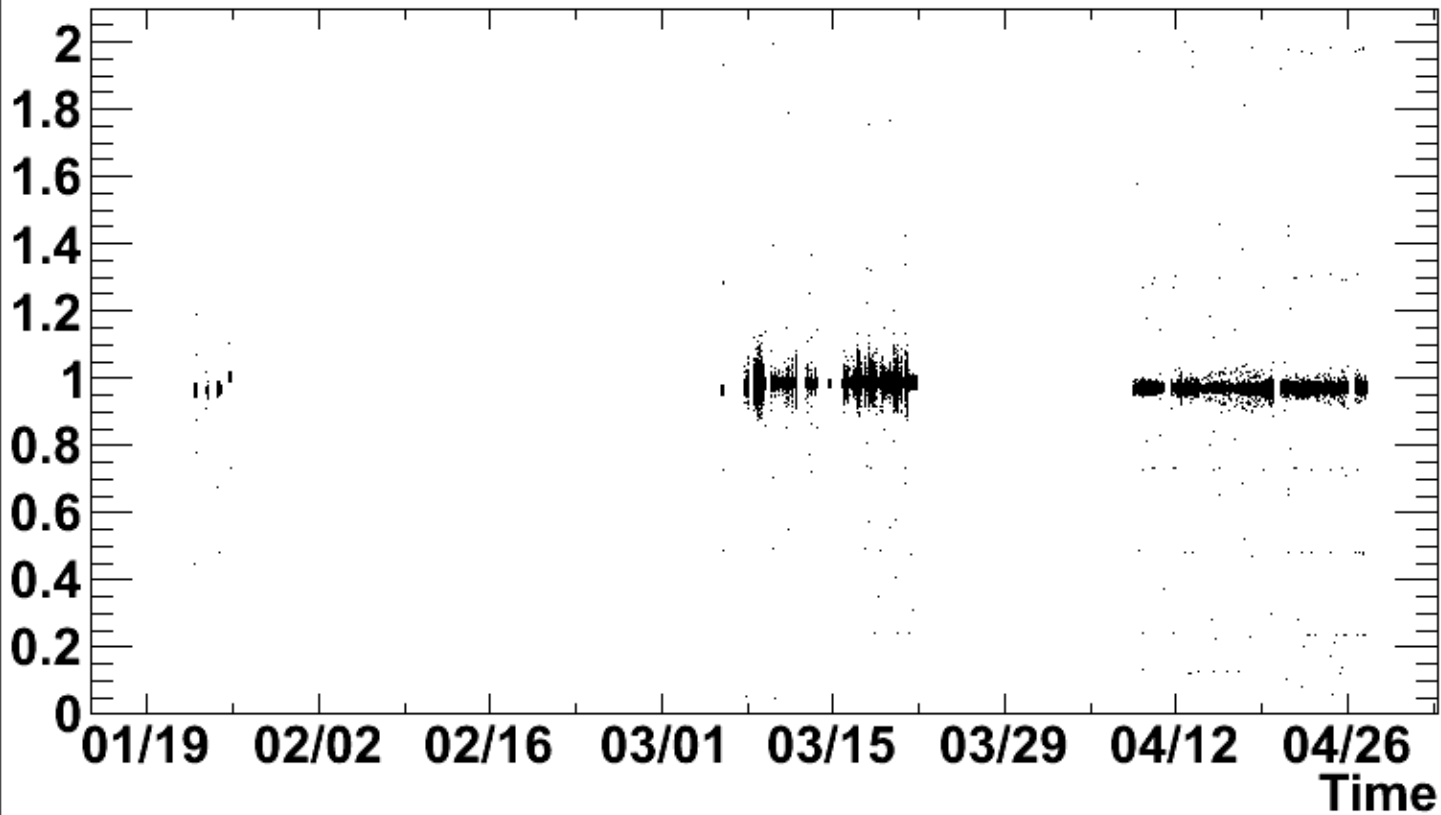


Mean=0.973, RMS=0.0129
RMS/Mean=1.33%

CT5/DCCT

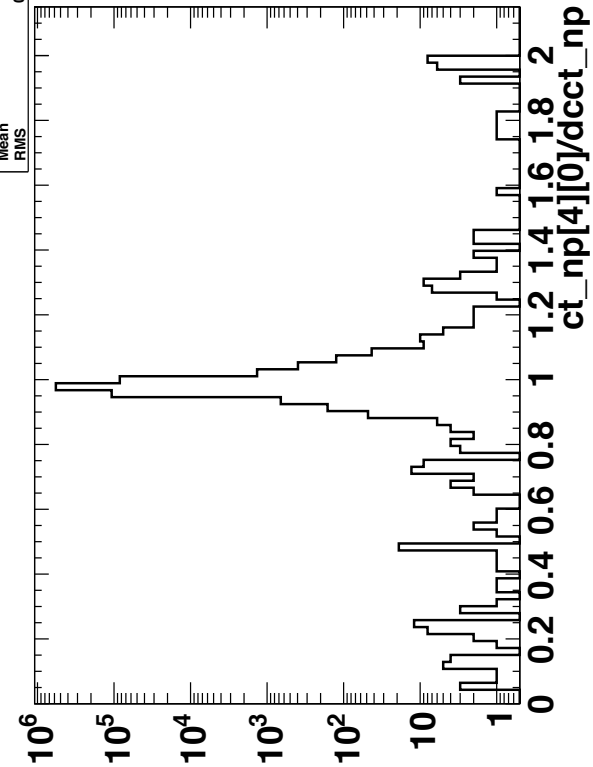
CT5/DCCT

/dcct_np:{trig i&TMath::Abs(ct_np[4][0]/dcct_np-1)<1&&dcct_np>0}



Entries	769721
Mean	0.9762
RMS	0.01304

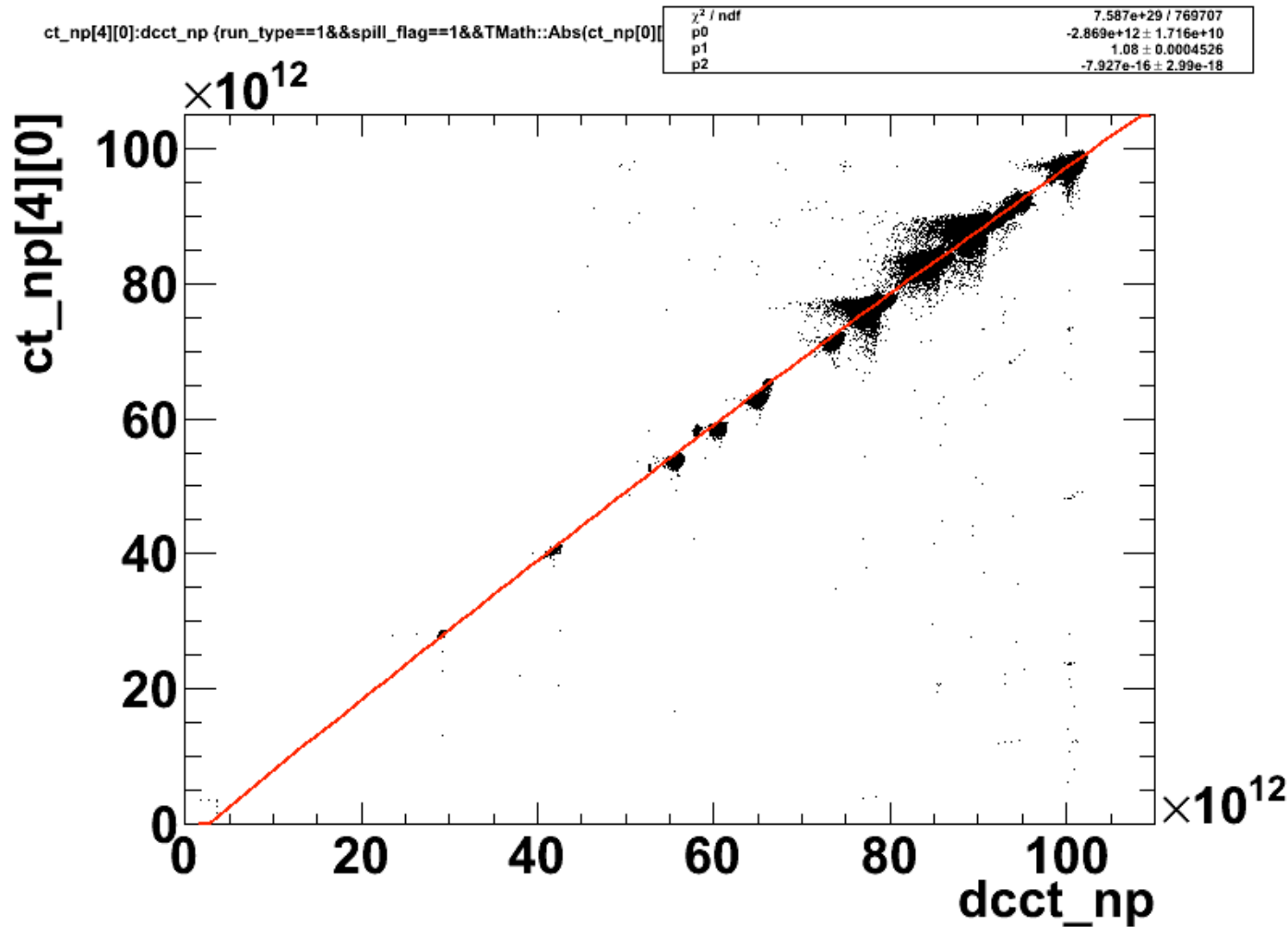
ct_np[4][0]/dcct_np {run_type==1&&spill_flag==1&&TMath::Abs(ct_np[4][0]/dcct_np-1)<1&&dcct_np>0}



Mean=0.976, RMS=0.0130

RMS/Mean=1.33%

CT5 vs DCCT



fit by **quadratic function** → almost linear correlation

Chi2	=	7.58694e+29		
Ndf	=	769707		
p0	=	-2.86856e+12	+/-	1.71616e+10
p1	=	1.08022	+/-	0.000452603
p2	=	-7.92733e-16	+/-	2.99032e-18

Summary table

	CT1/ DCCT	CT2/ DCCT	CT3/ DCCT	CT4/ DCCT	CT5/ DCCT
Mean	0.992	0.986	0.988	0.973	0.976
RMS	0.0123	0.0124	0.0126	0.0129	0.0130
RMS/Mean [%]	1.24	1.26	1.28	1.33	1.33