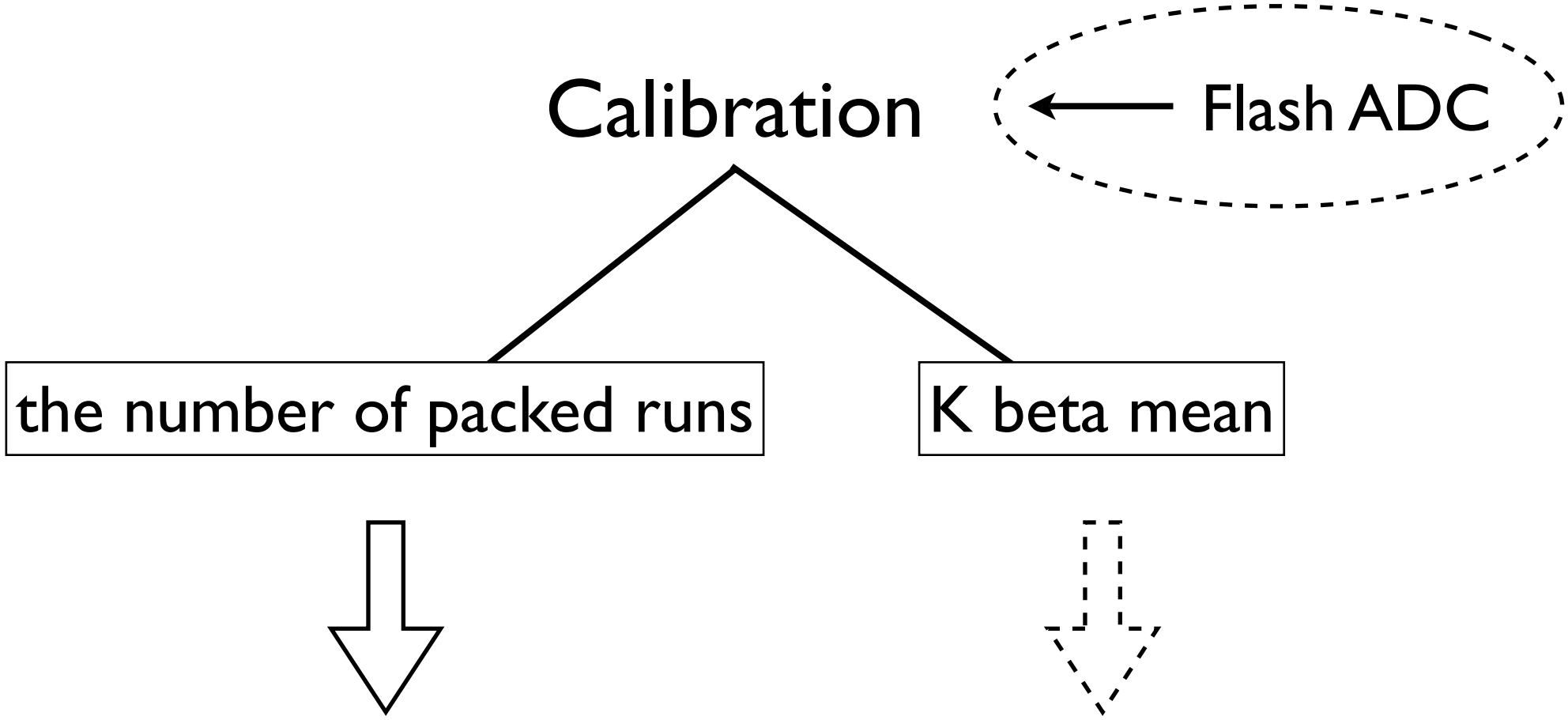
E570 meeting 25/Apr/2006 H. Tatsuno

Energy Calibration Study

The linearity of four peaks
TiKa1, TiKb, NiKa1, NiKb

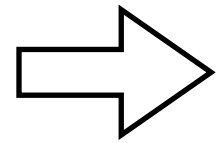
Summary : The centroid of K beta relative to K alpha line is smaller than the value of X-ray Data Booklet.


Calibration
Flash ADC
the number of packed runs
K beta mean
1 run part = 1~1.5 shifts
= 4~6 runs
systematic shifts
relative to Ka line
?
but the most suitable
range is unknown ...

K beta mean

Response function

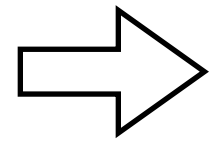
tail (exponential)
shelf (step function)
escape peak (small Gaussian)



too little
to fit their height
~ 2% of main Gaussian
(we can fix their height
from ion source data)

Local fit

background : linear y = a + bx



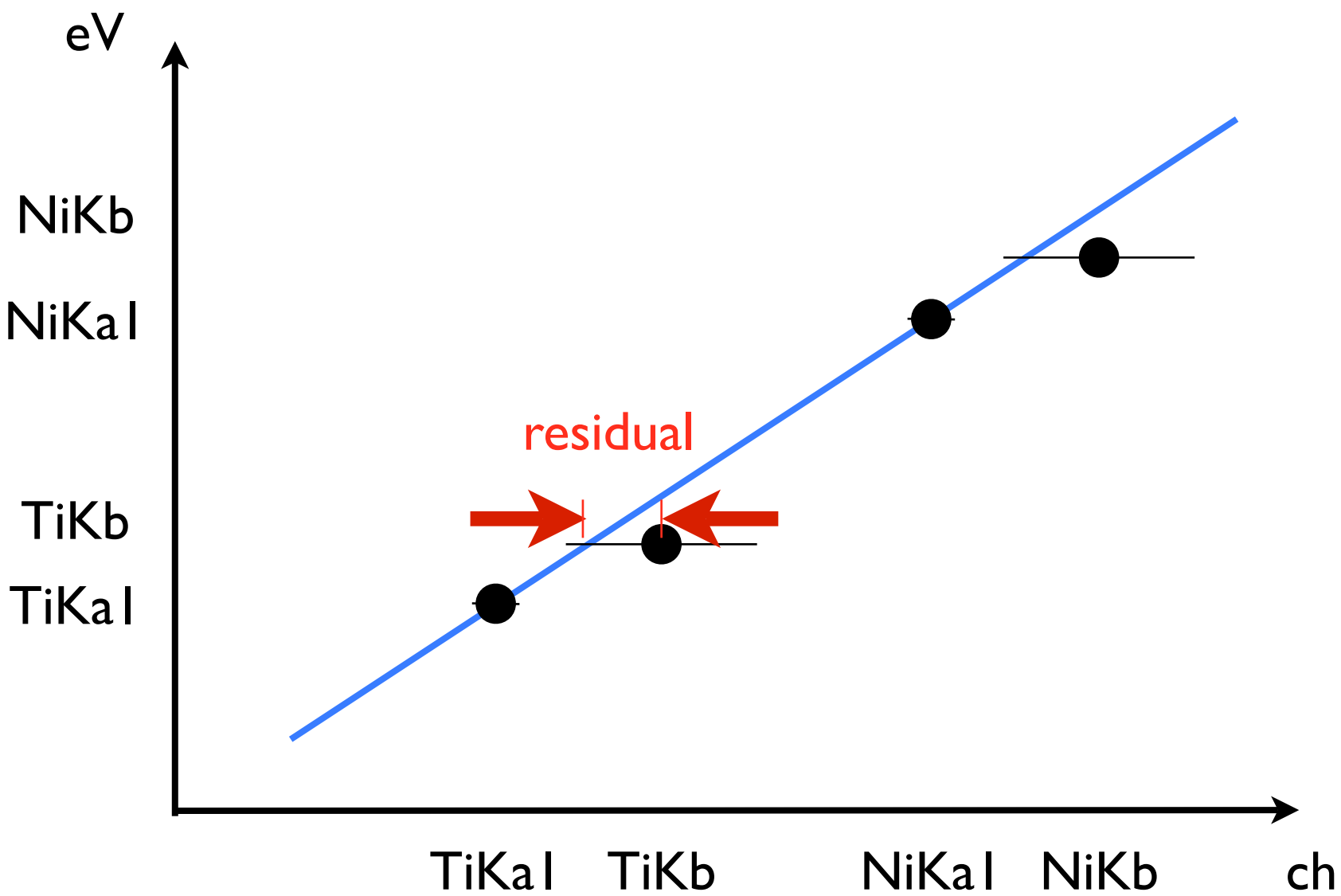
no change ...

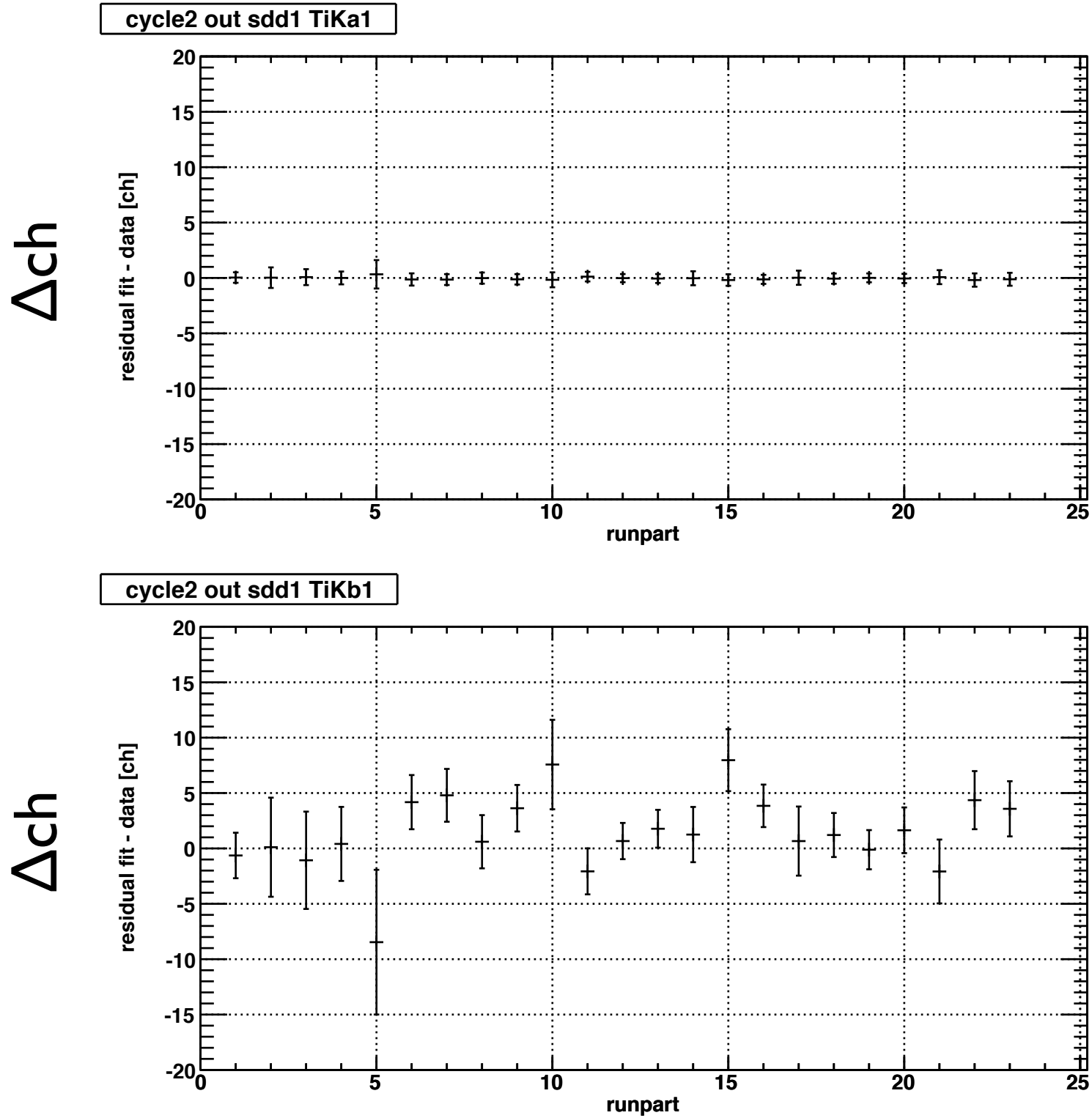
Global fit

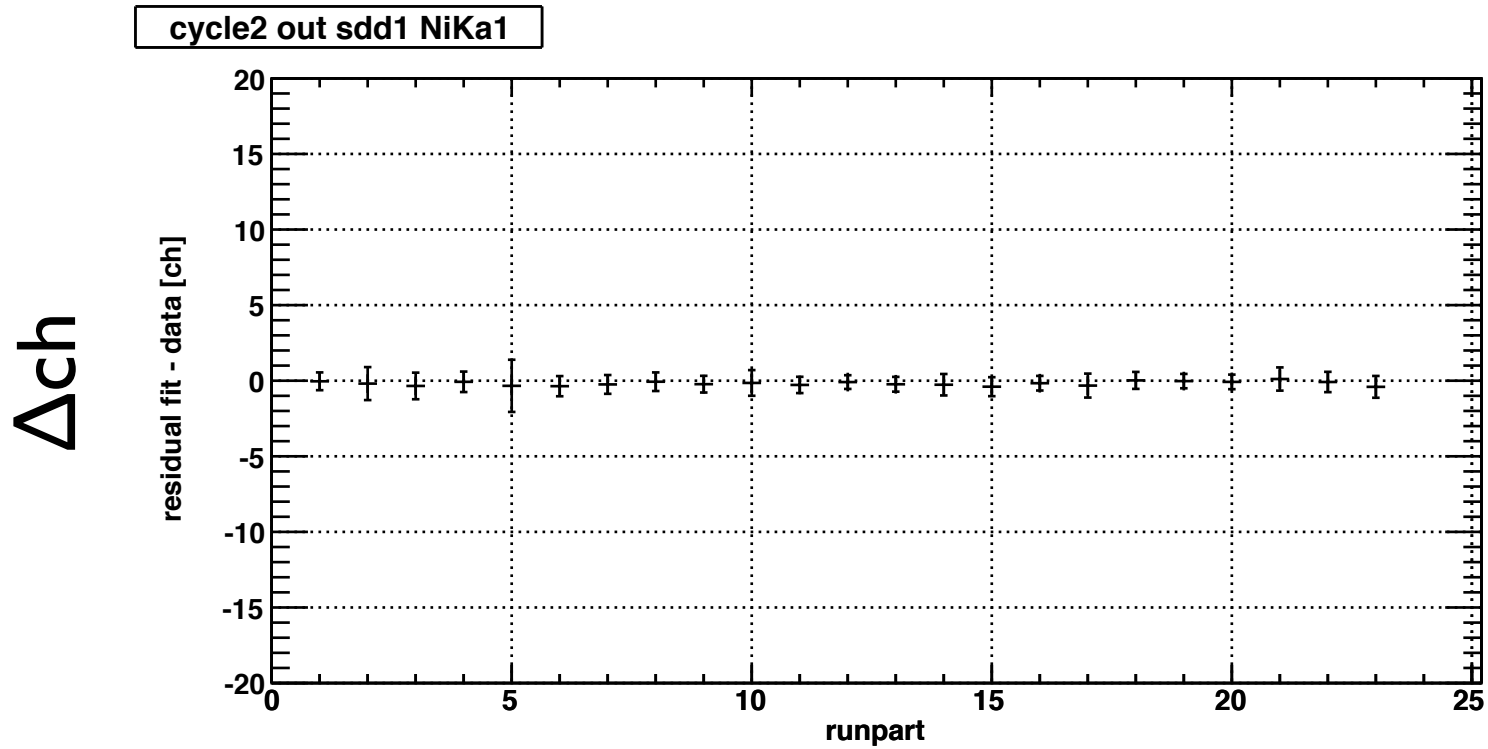
four points fit (TiKa1, TiKb, NiKa1, NiKb)

linearity check →

Four points fit and definition of residual




cycle2 out sdd1 TiKa1
Δch
residual fit - data [ch]
runpart
cycle2 out sdd1 TiKb1
Δch
residual fit - data [ch]
runpart


cycle2 out sdd1 NiKa1
Δch
residual fit - data [ch]
runpart
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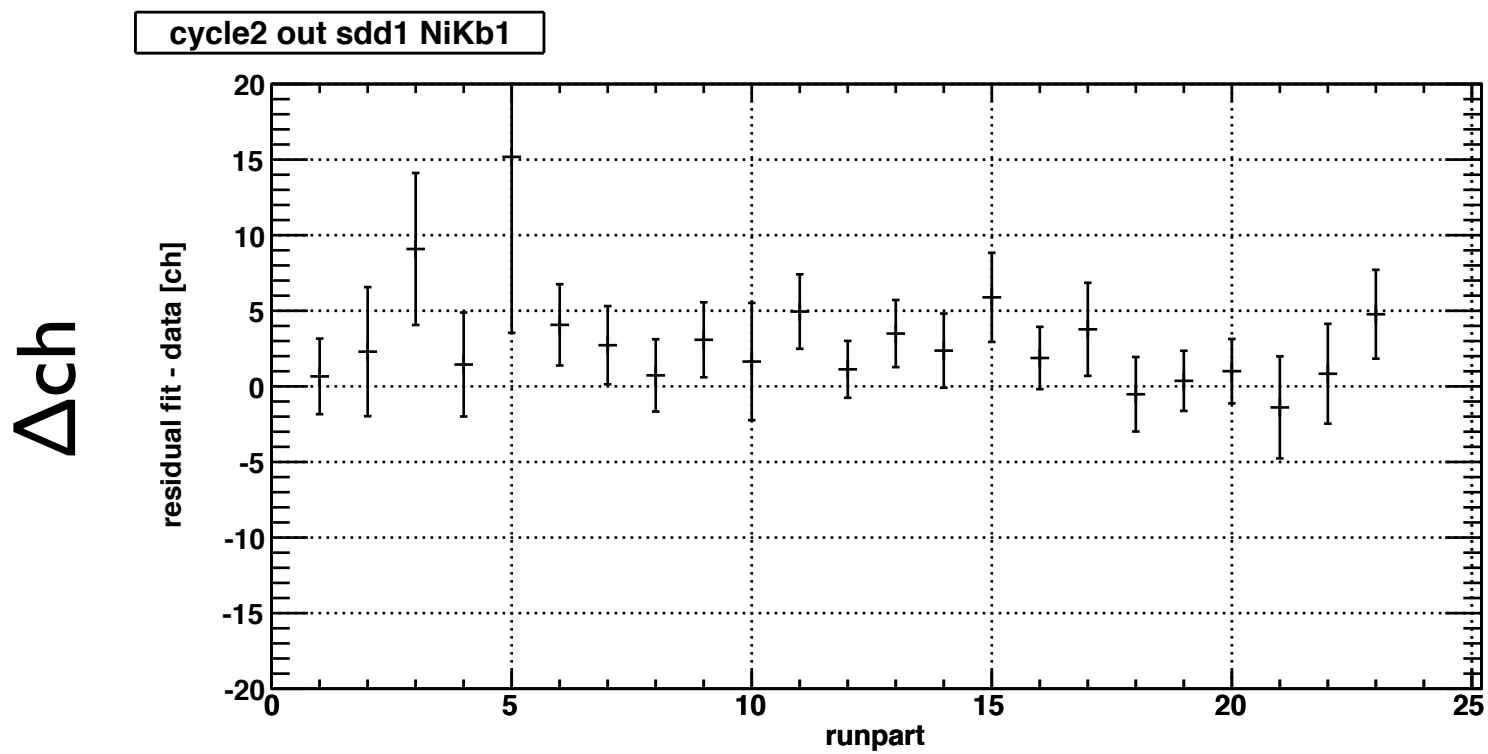
15
20
25


cycle2 out sdd1 NiKb1
Δch
residual fit - data [ch]
runpart
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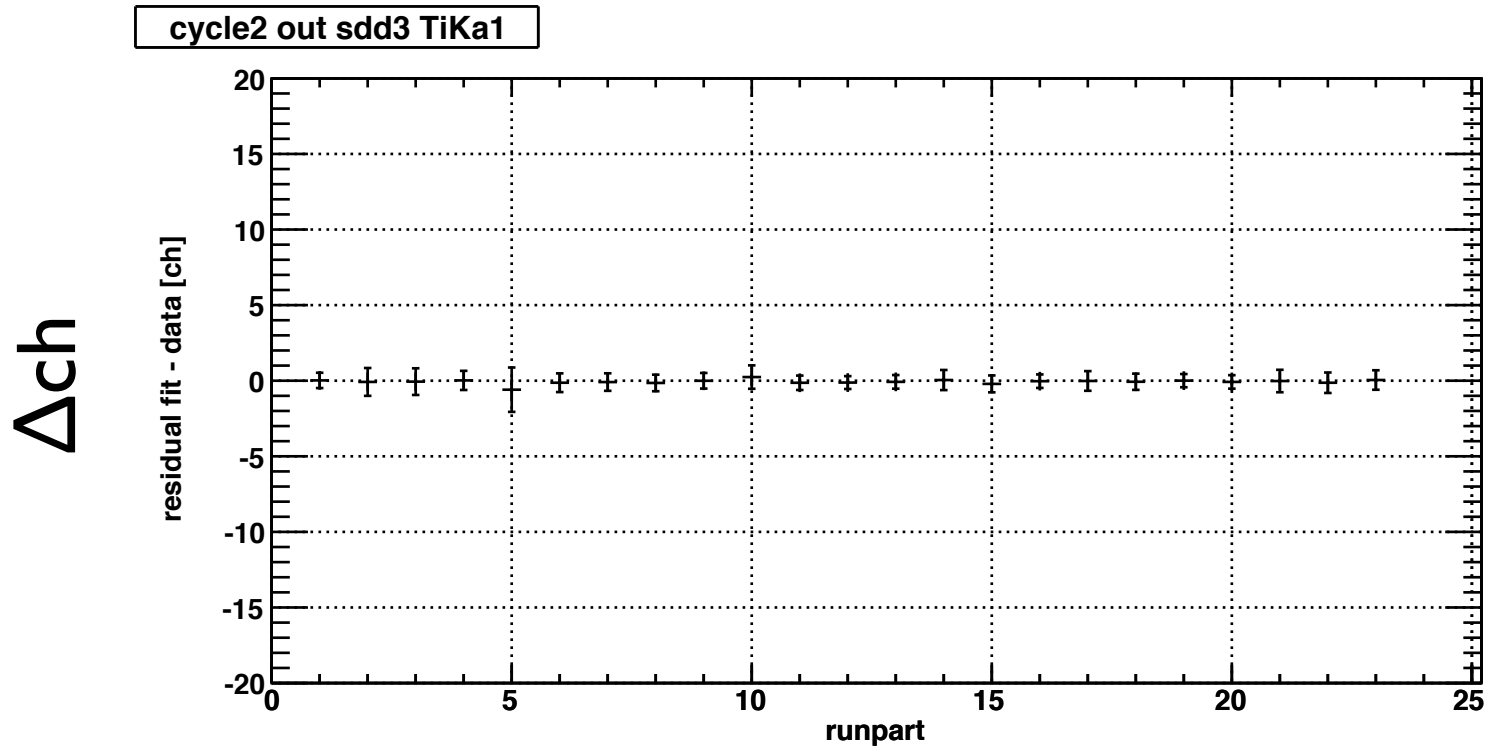
cycle2 out sdd3 TiKa1
Δch
residual fit - data [ch]
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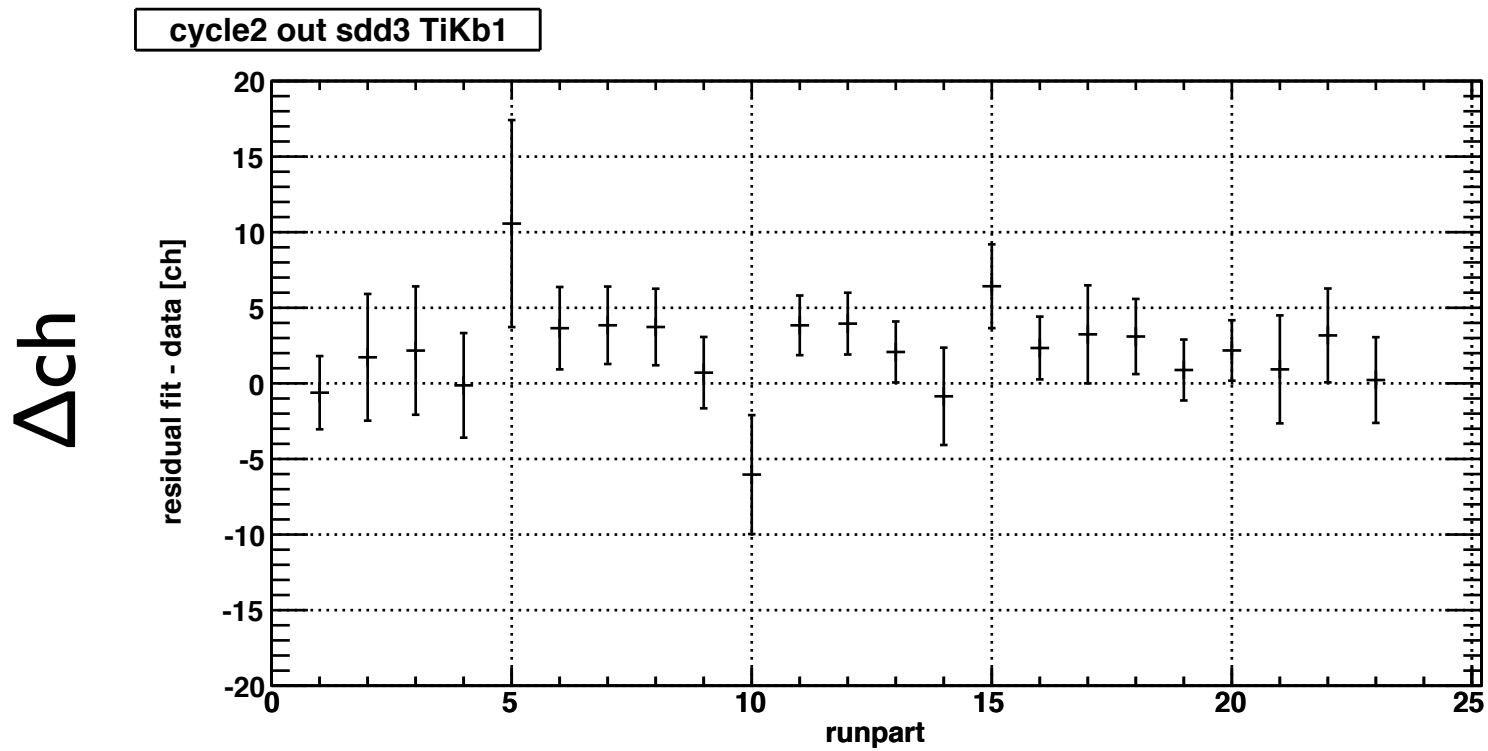
5
10
15
20
25


cycle2 out sdd3 TiKb1
Δch
residual fit - data [ch]
runpart
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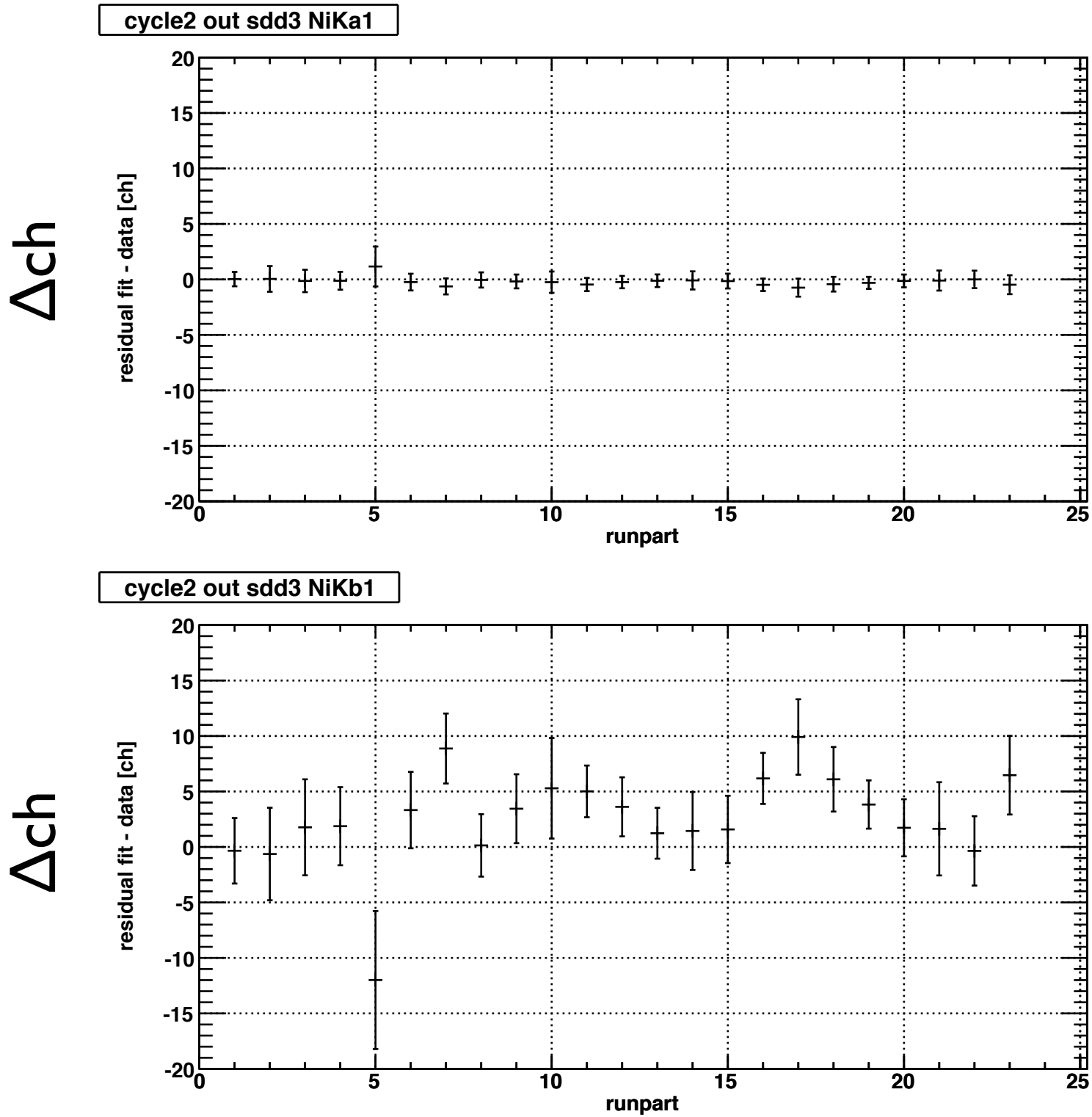
25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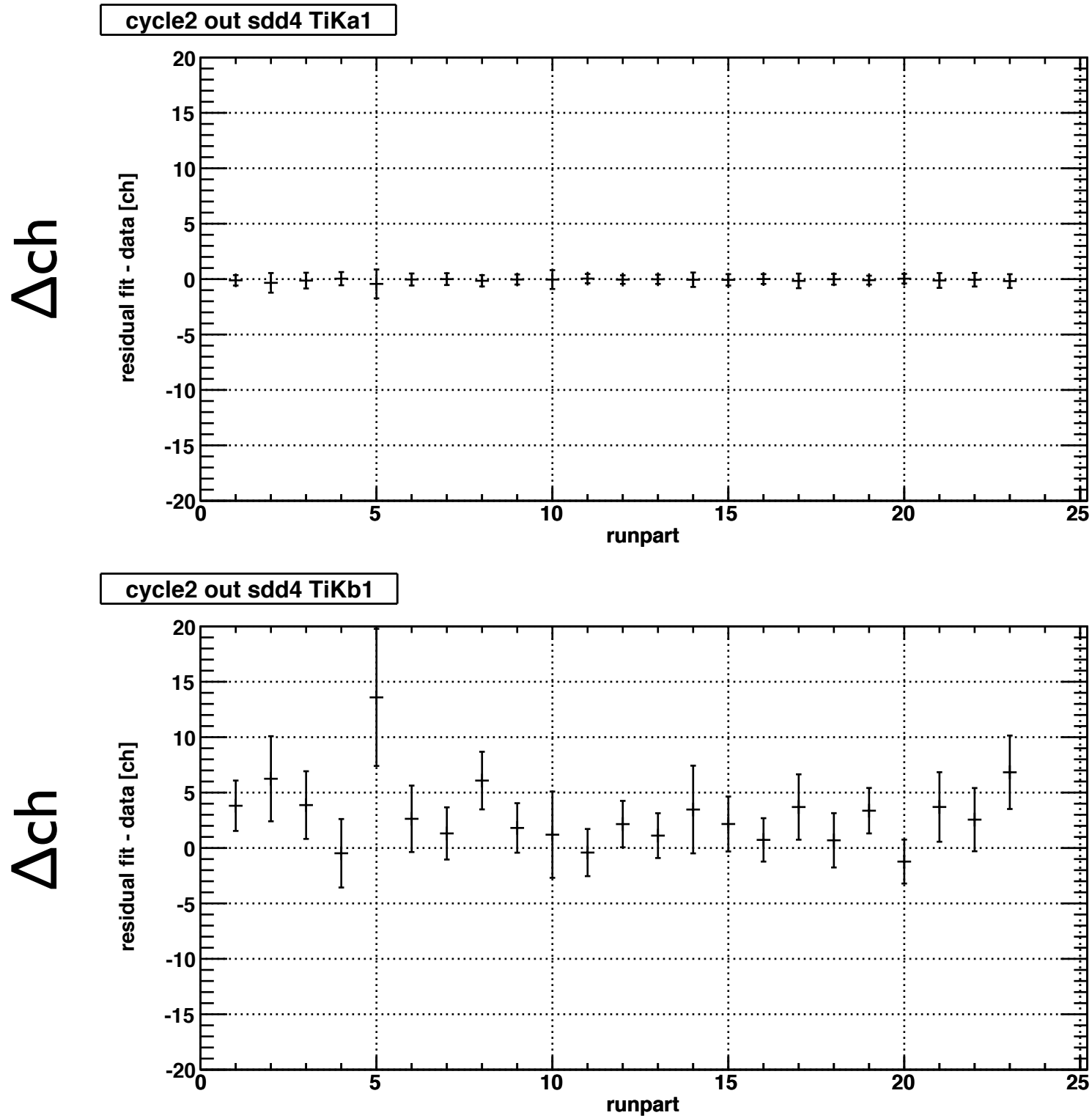
Δch
residual fit - data [ch]
runpart
cycle2 out sdd3 NiKb1
Δch
residual fit - data [ch]
runpart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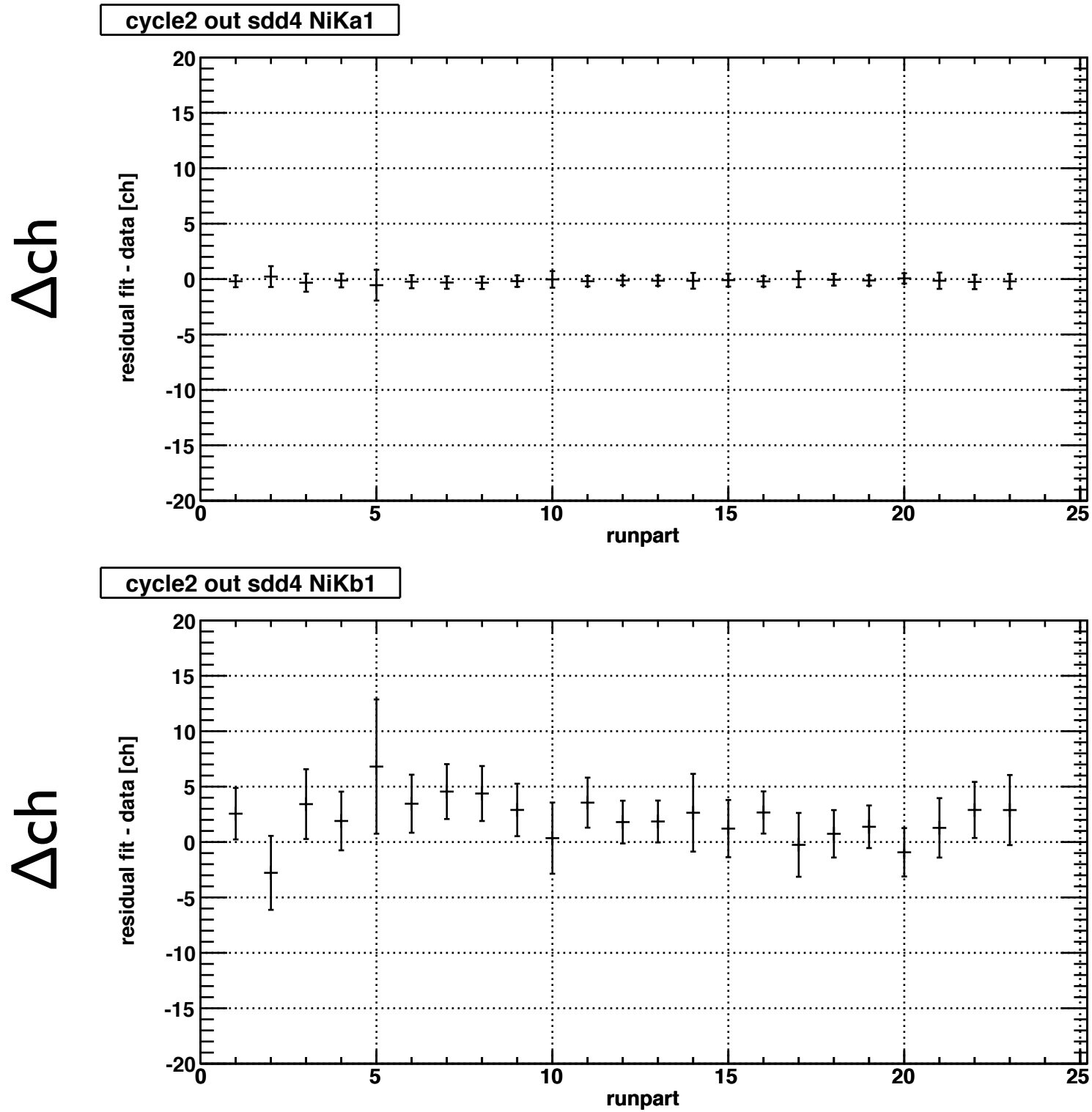
Δch
residual fit - data [ch]
runpart
cycle2 out sdd4 TiKb1
Δch
residual fit - data [ch]
runpart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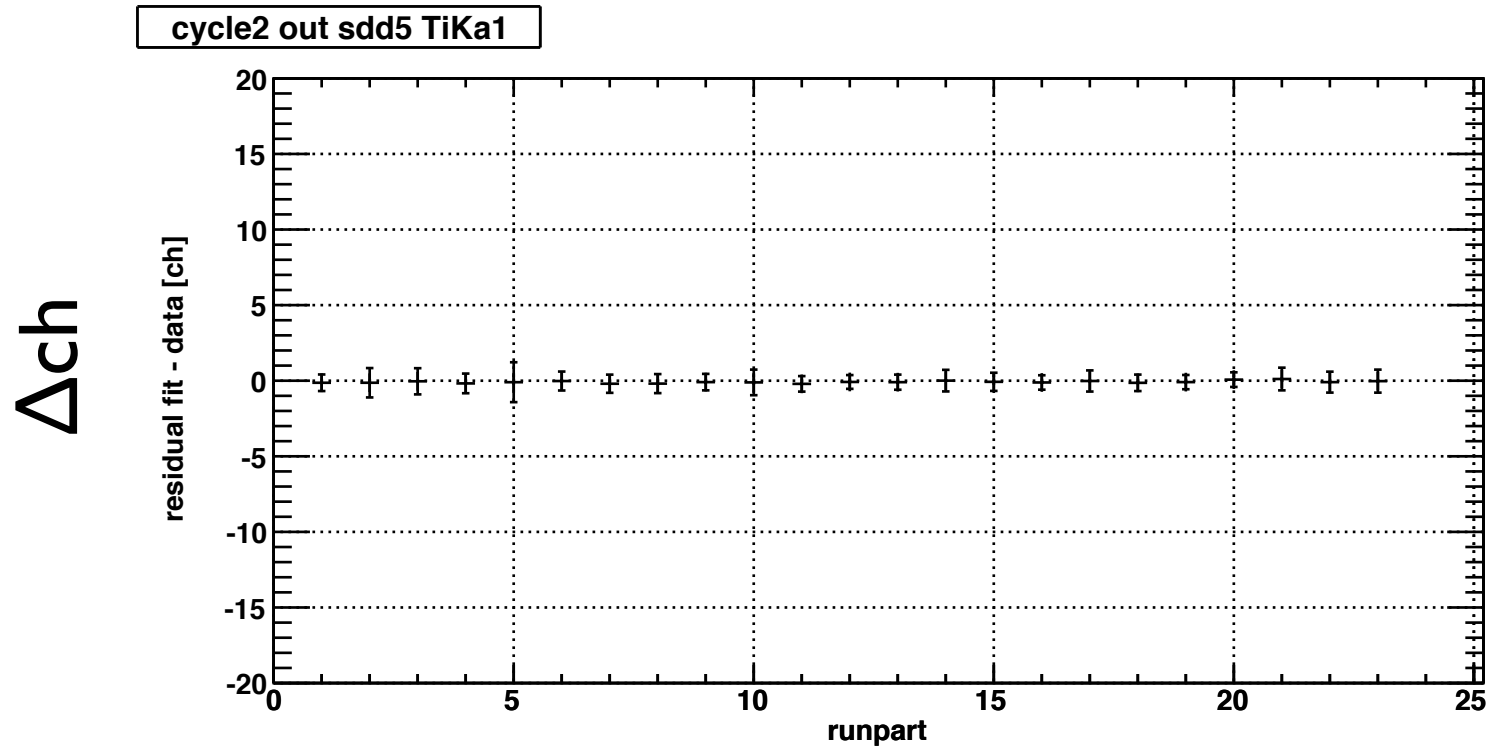
Δch
residual fit - data [ch]
runpart
cycle2 out sdd4 NiKb1
Δch
residual fit - data [ch]
runpart


cycle2 out sdd5 TiKa1
Δch
residual fit - data [ch]
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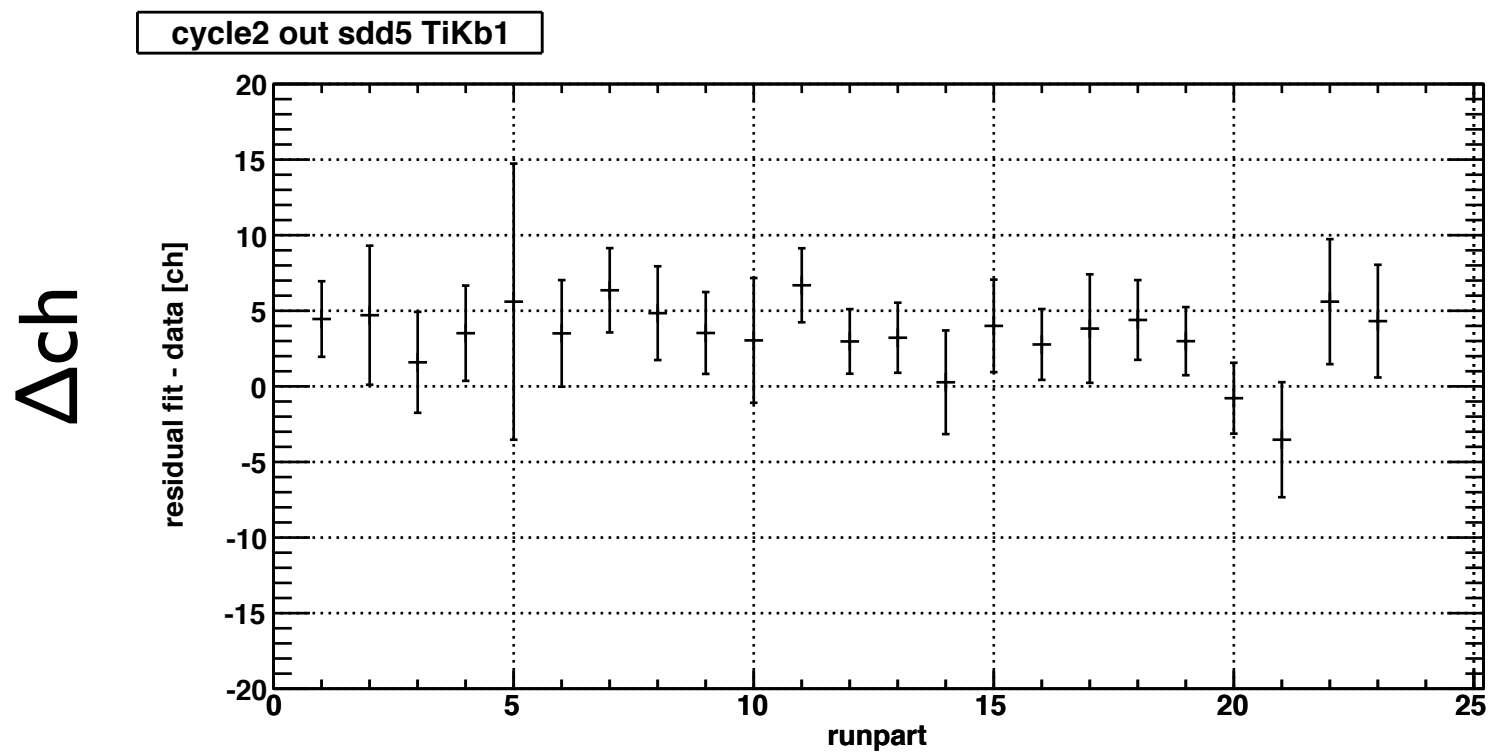
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Δch
residual fit - data [ch]
runpart
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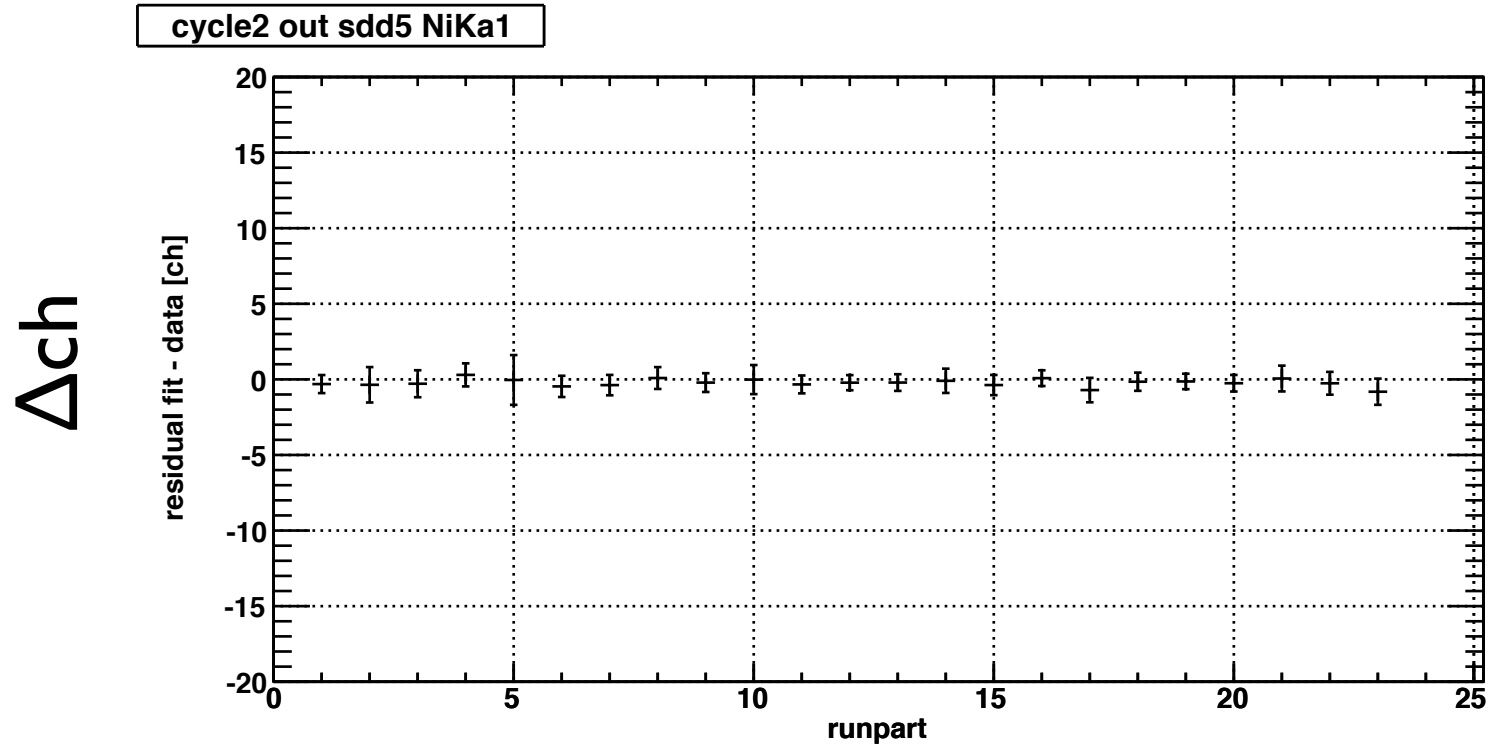
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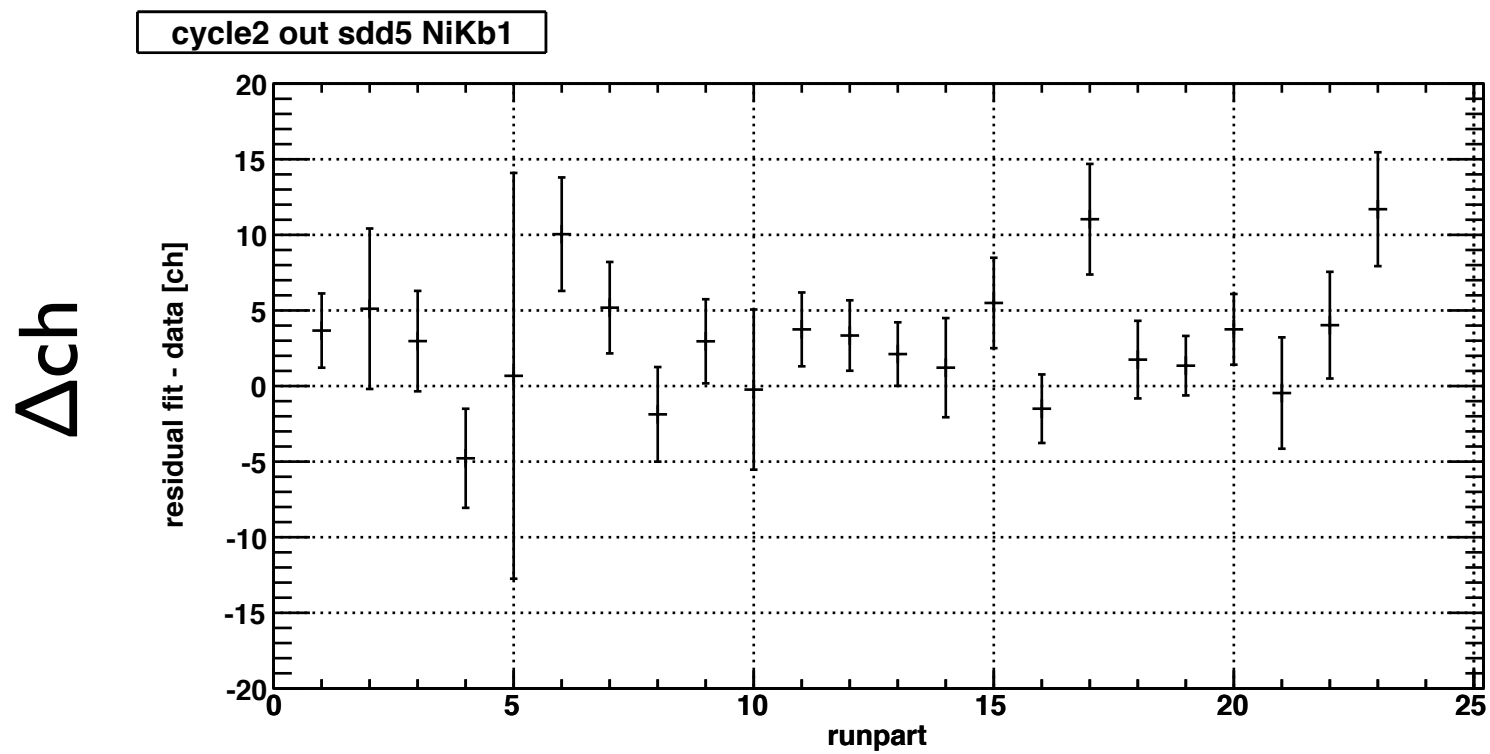
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residual fit - data [ch]
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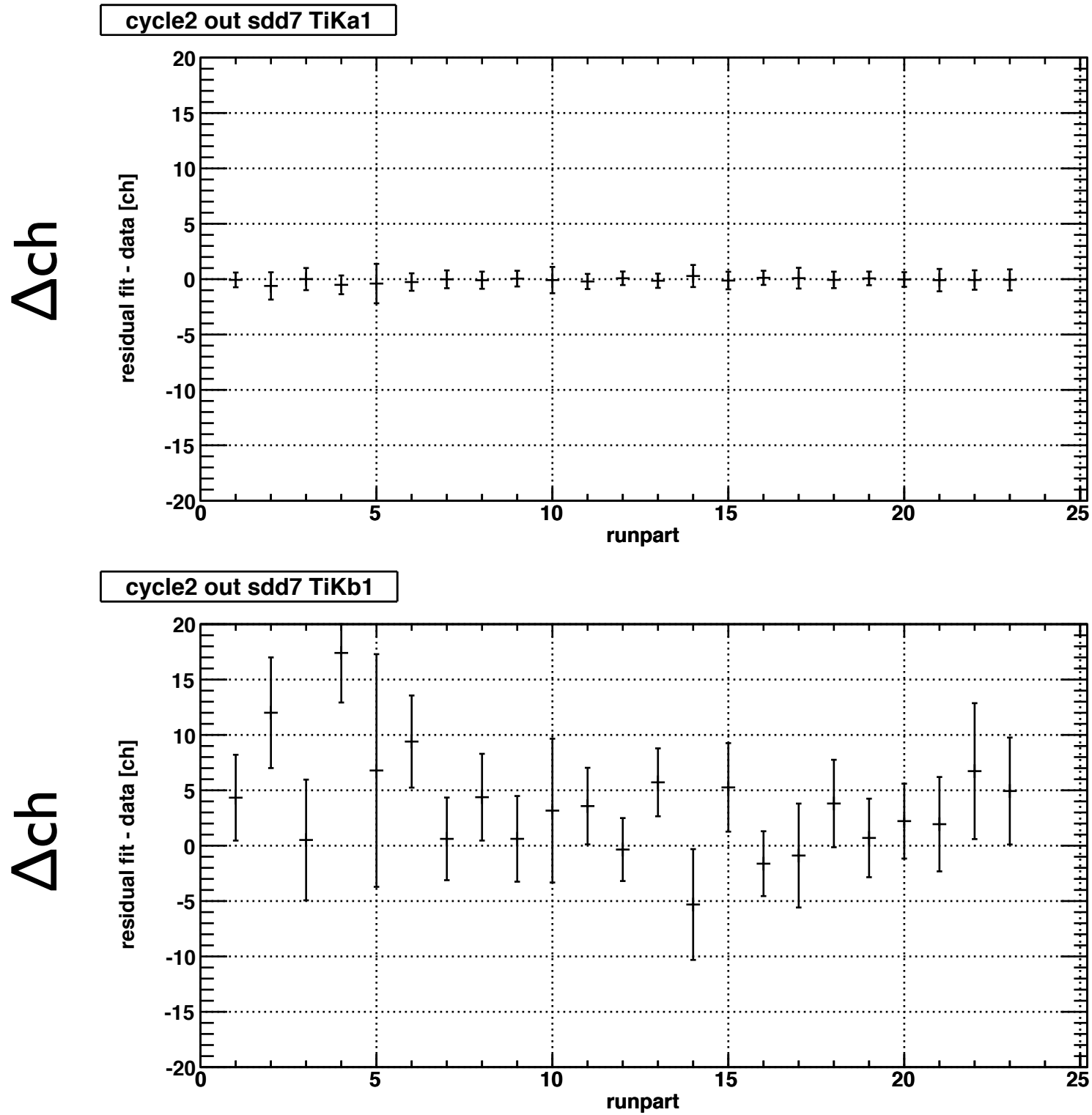
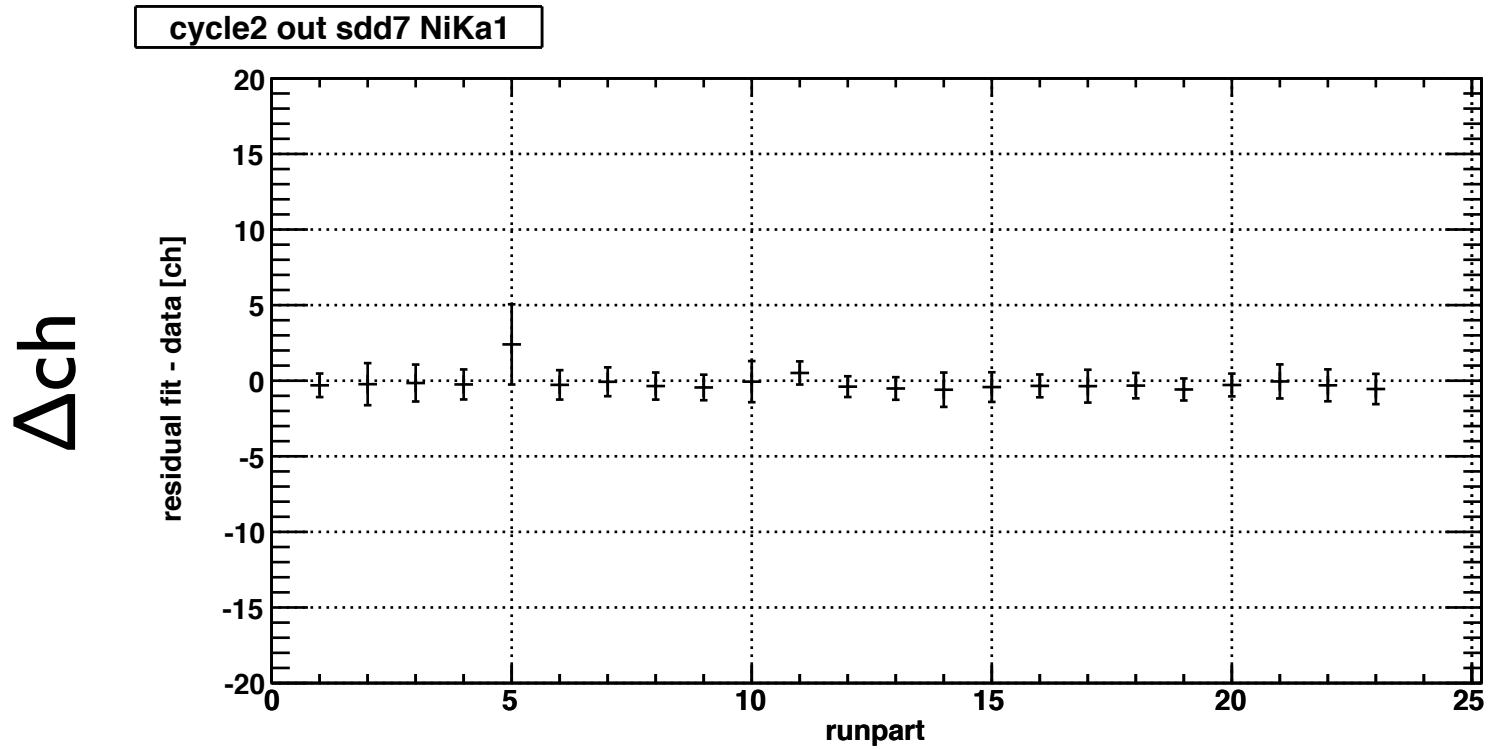

cycle2 out sdd7 TiKa1
Δch
residual fit - data [ch]
runpart
cycle2 out sdd7 TiKb1
Δch
residual fit - data [ch]
runpart


cycle2 out sdd7 NiKa1
Δch
residual fit - data [ch]
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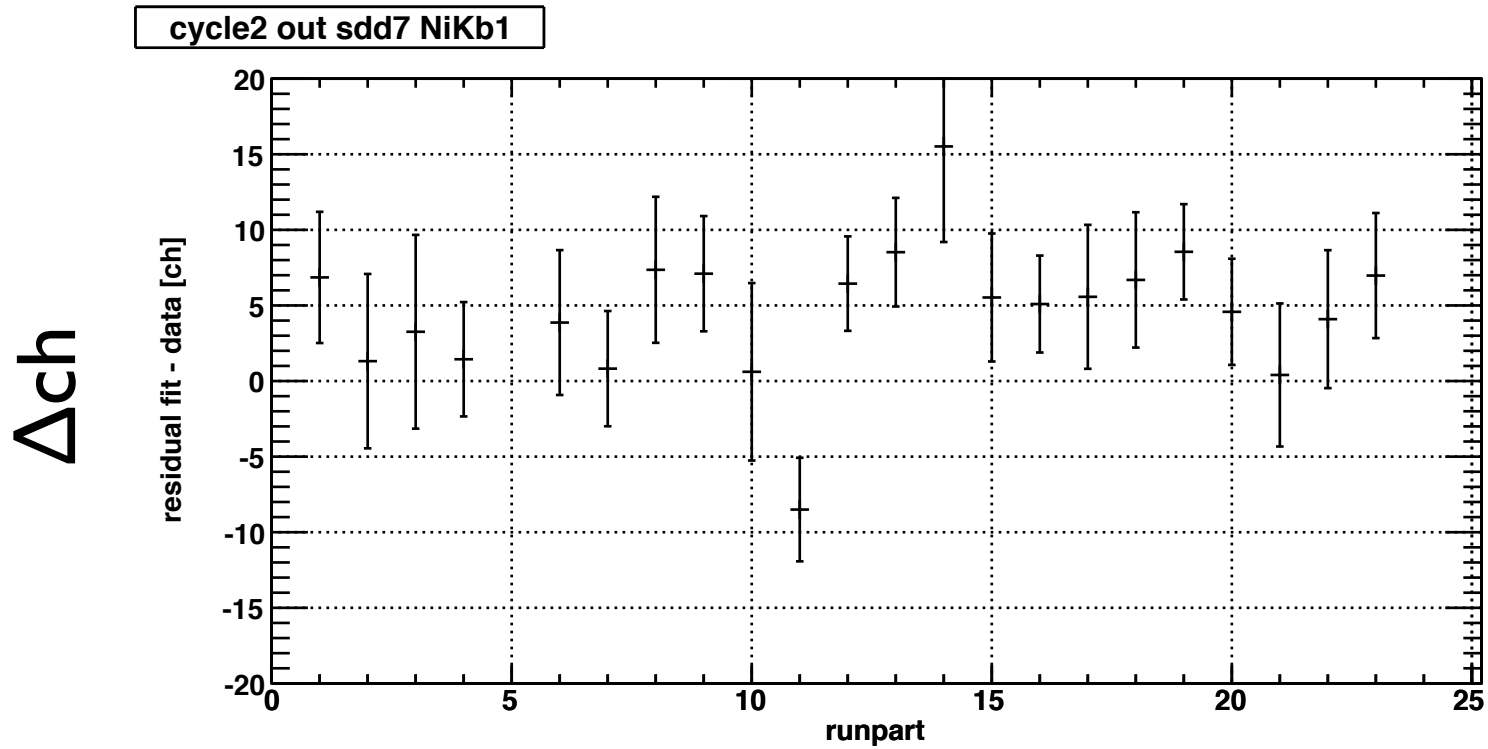
cycle2 out sdd7 NiKb1
Δch
residual fit - data [ch]
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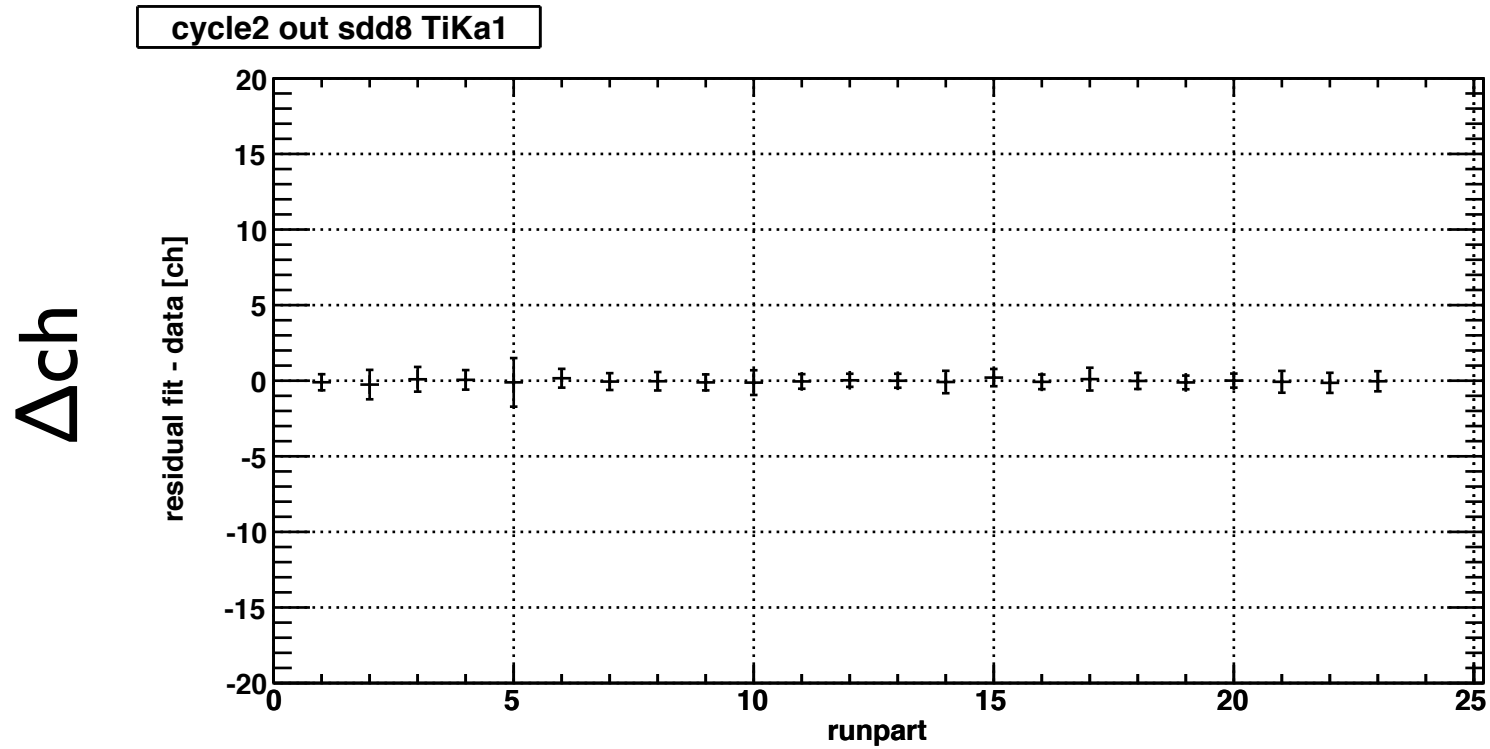
cycle2 out sdd8 TiKa1
Δch
residual fit - data [ch]
runpart
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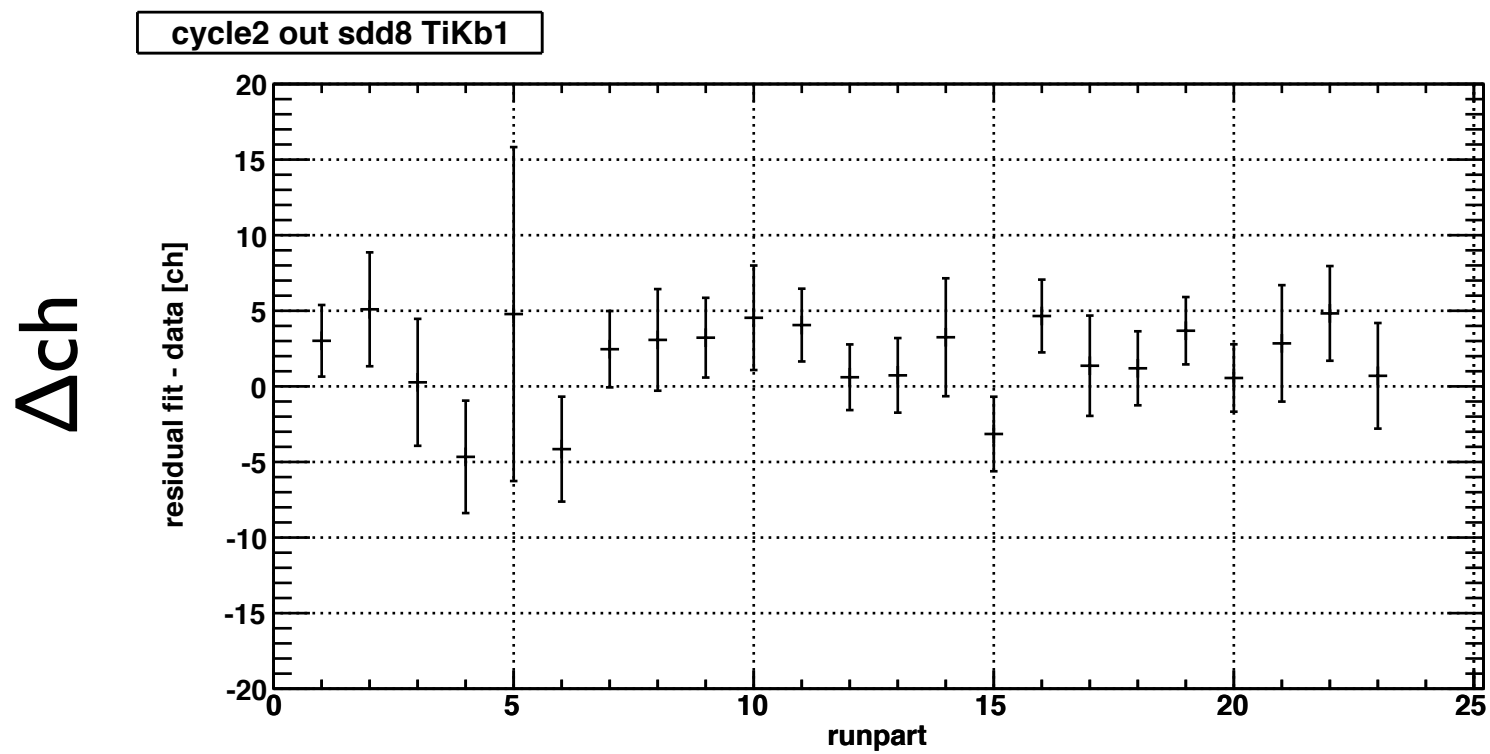
cycle2 out sdd8 TiKb1
Δch
residual fit - data [ch]
runpart
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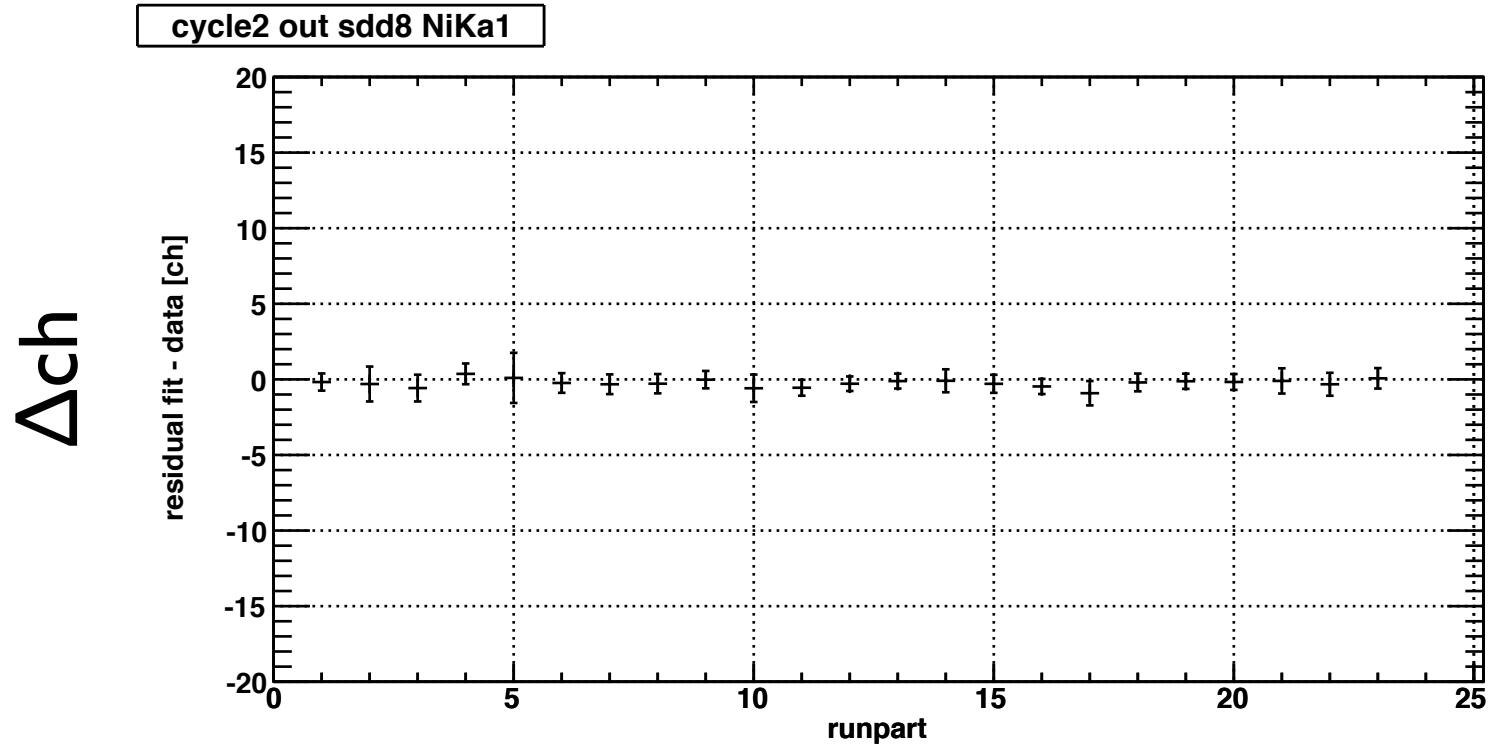
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Δch
residual fit - data [ch]
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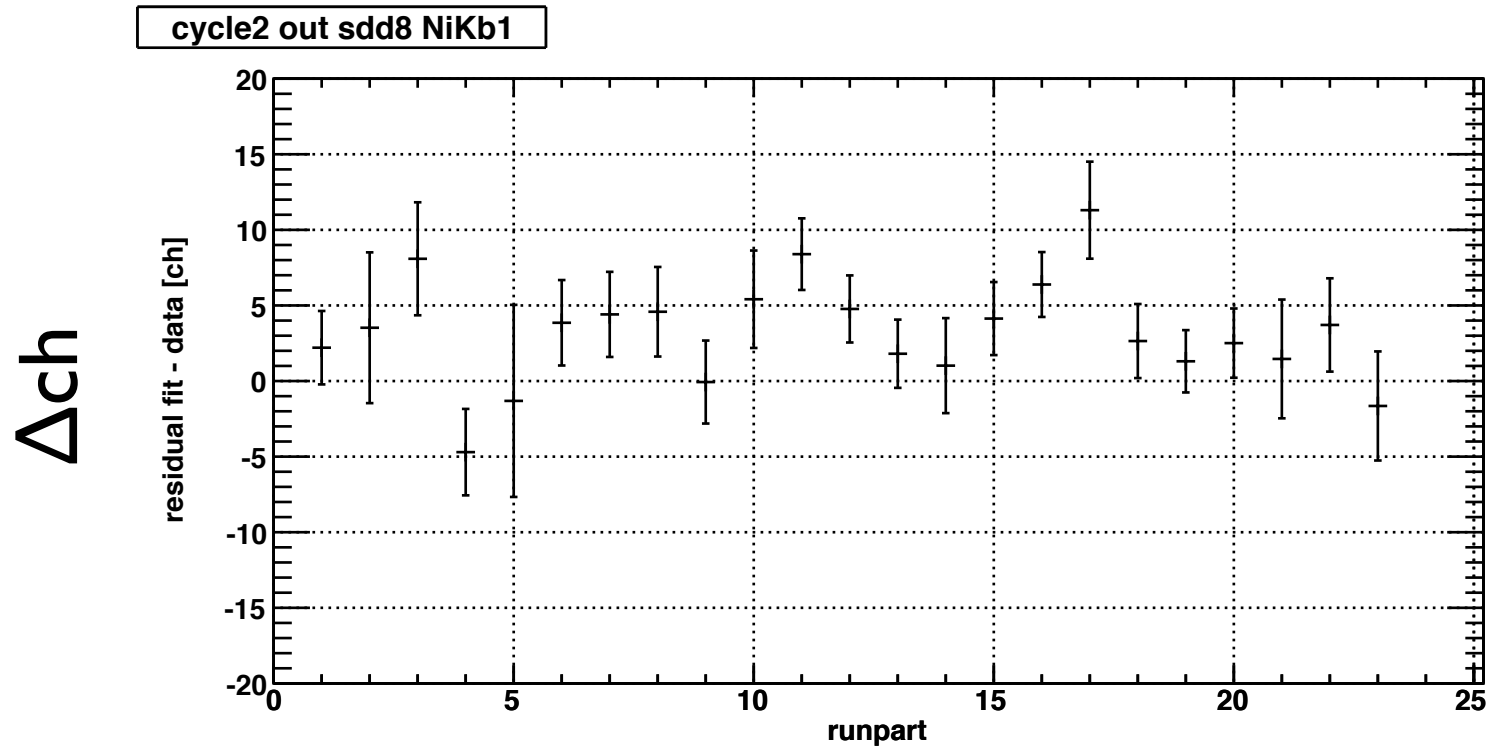
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-20
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