

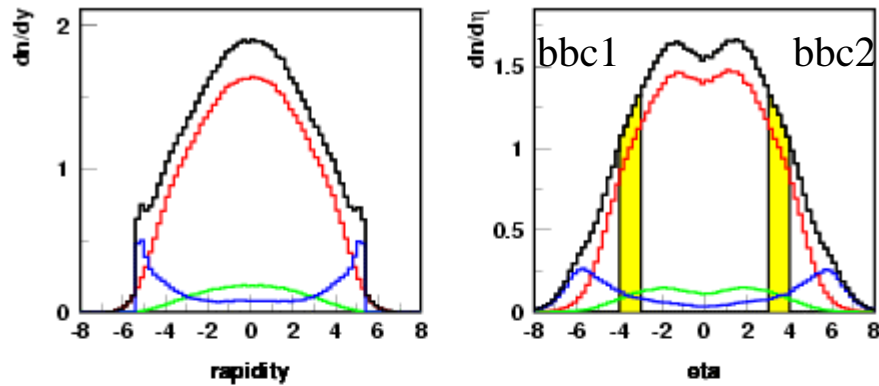
T0 status

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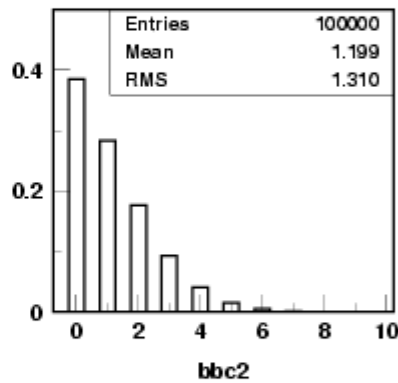
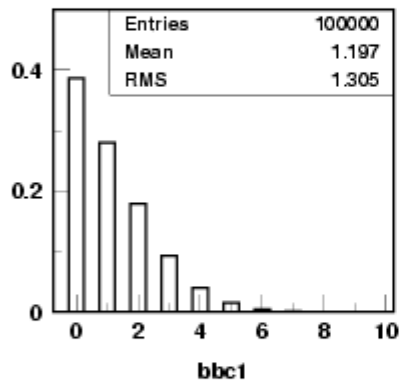
contents

- (1) Do we really need T0?
- (2) rate estimate and statistics
- (3) design and installation

rqmd v24, 100GeV p + 100GeV p → charged particles

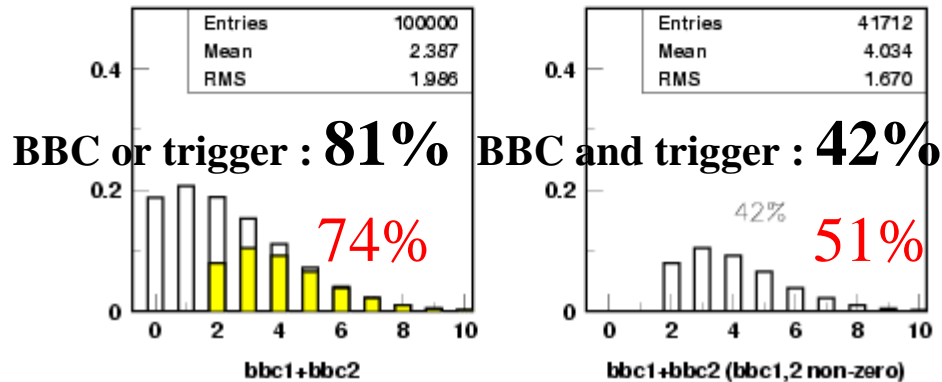


charged particle
 dn/dy , $dn/d\eta$
 distribution



number of hits
 in a single BBC

Fritiof was found
 to be similar by
 Masaya.O.

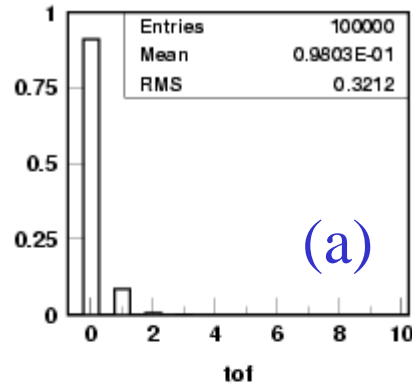
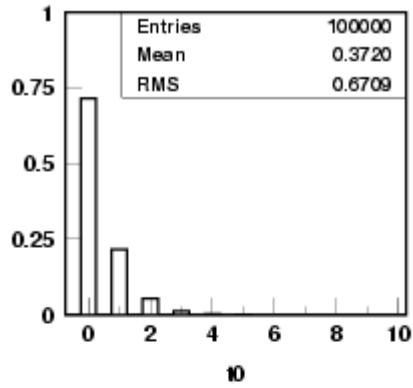


sum number of
 hits in both BBCs

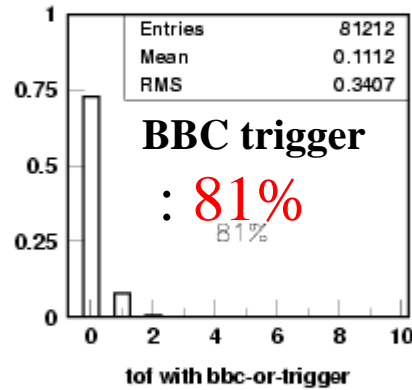
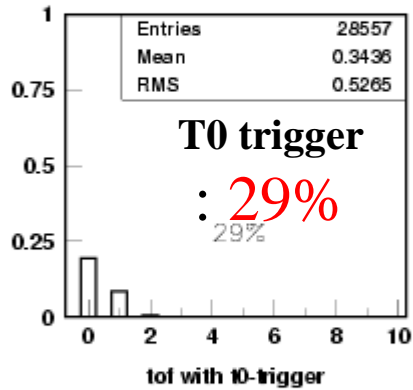
(BBC1>0 &
 BBC2>0)

Pythia : by Hiroaki.O

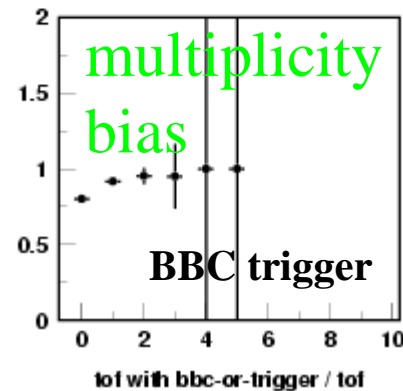
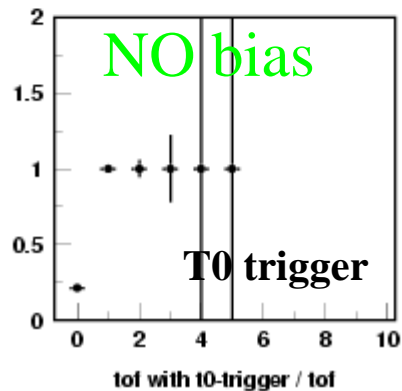
rqmd v24, 100GeV p + 100GeV p → charged particles



number of hit
in T0 and TOF



number of hit
in TOF with
T0/BBC trigger



ratio relative to
the original TOF
hit dist. (a)

If the bias is only on the multiplicity of the event, this can be estimated with 100% NTC efficiency and the bias can be corrected as a function of event multiplicity.

However, if this bias depends on the particle species or momenta, it can not be corrected even with NTC.

That kind of bias can only be known by selecting events with or without hit on BBC, if we have T0 which has by definition no bias and provides us PID.

Without T0, we can do PID only in events with hit on BBC. So as long as BBC does not have 100% efficiency, we need T0 to measure PIded spectra without bias and even to know the bias itself.

Trigger efficiency

NTC: 100%

BBC: 80% (40%)

T0: 30%

TOF: 10%

Trigger options

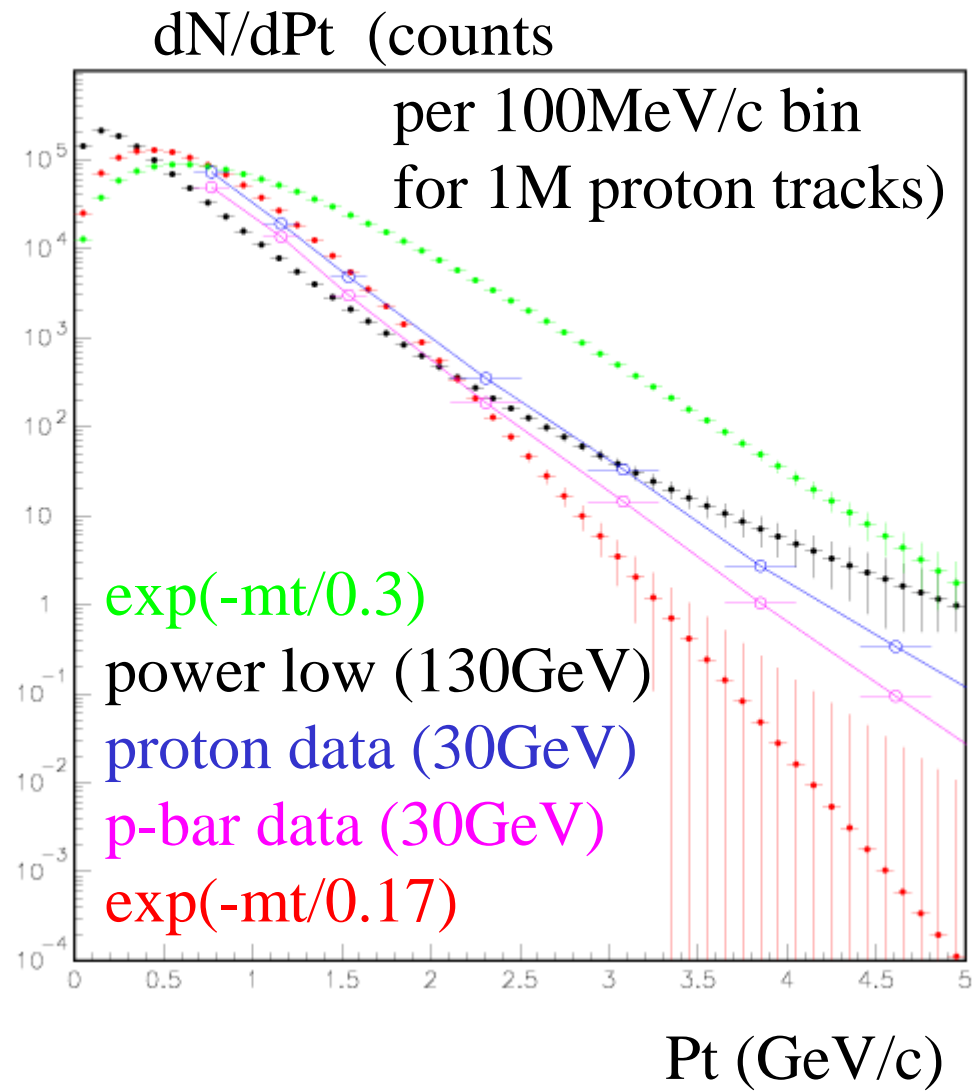
(a) beam cross

(b) a+NTC

(c) a+NTC+T0

(d) a+NTC.or.BBC.or.T0

- (1) Luminosity 10^{30} ($\text{cm}^{-2}\text{sec}^{-1}$) : 50kHz pp interactions
- (2) Trigger rate (1st level) : the same by 100% NTC trigger
- (3) DAQ/Data rate : 1kHz gives 90Mevents/day.
- (4) 100M min. bias NTC triggered events gives
10M charged tracks in TOF.
- (5) 0.5M identified protons, K/p separation up to 5GeV/c
expected power low Pt distribution (next slide)
few counts in 200MeV/c bin at 5GeV/c (next slide)
- (6) 1 day with NTC trigger or 1/3 day with NTC+T0 trigger
without safety factor



(plan)

First 1 week with transverse polarization

Next 4 weeks with longitudinal polarization

(proposal)

1+1 days T0 in trigger for trans./long. polarization

1+1 weeks T0 in read-out with NTC trigger

remove T0 from IR after 2 weeks (if requested)

(reason)

reference for non-polarized HI beam collisions

~~(systematically remaining long. polarization in
the trans. polarized beam)~~

(more)

asymmetry of identified charged hadron (especially
high Pt proton, anti-proton) with respect to the
polarization

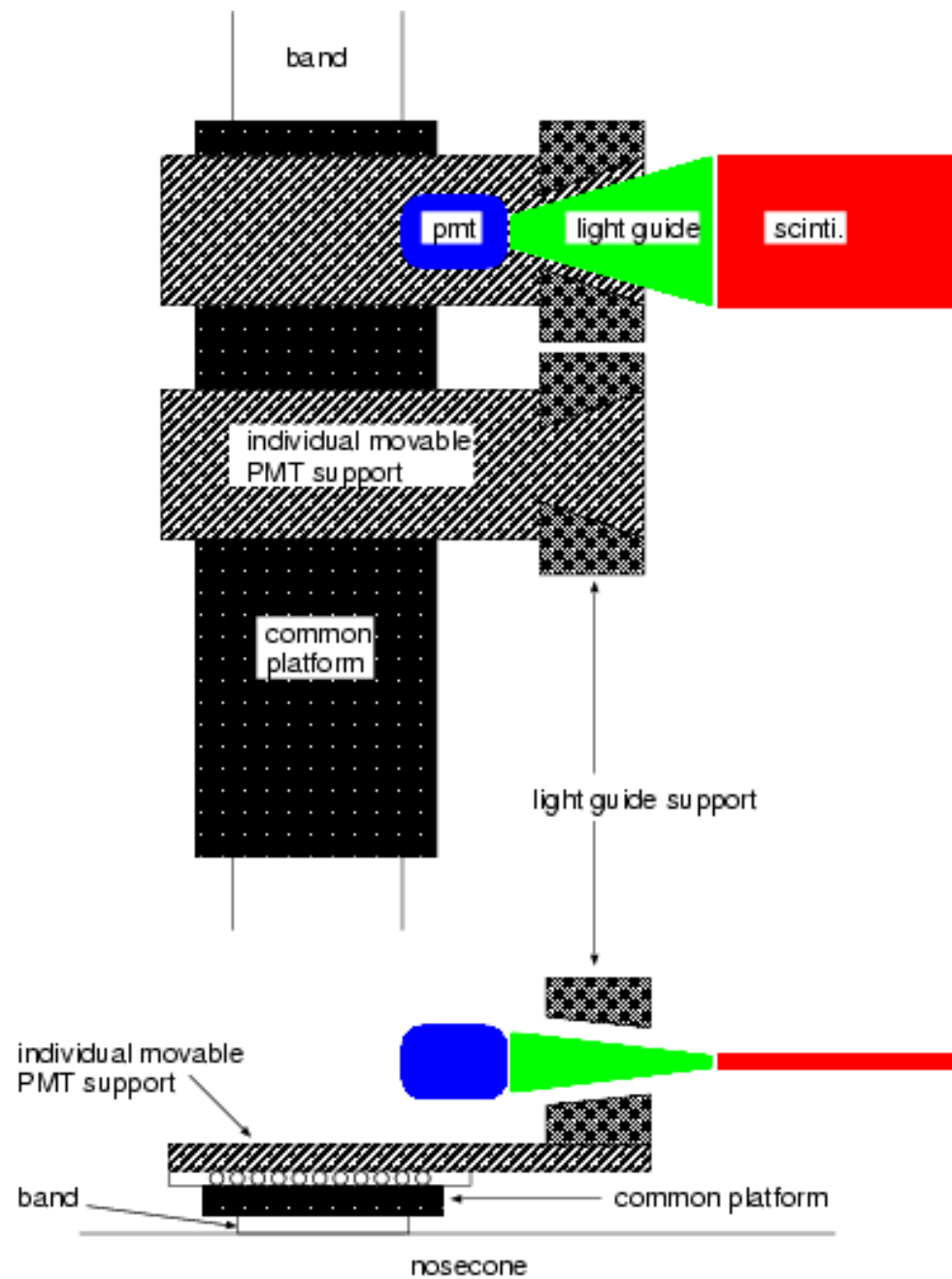
Do we like to have T0 installed?

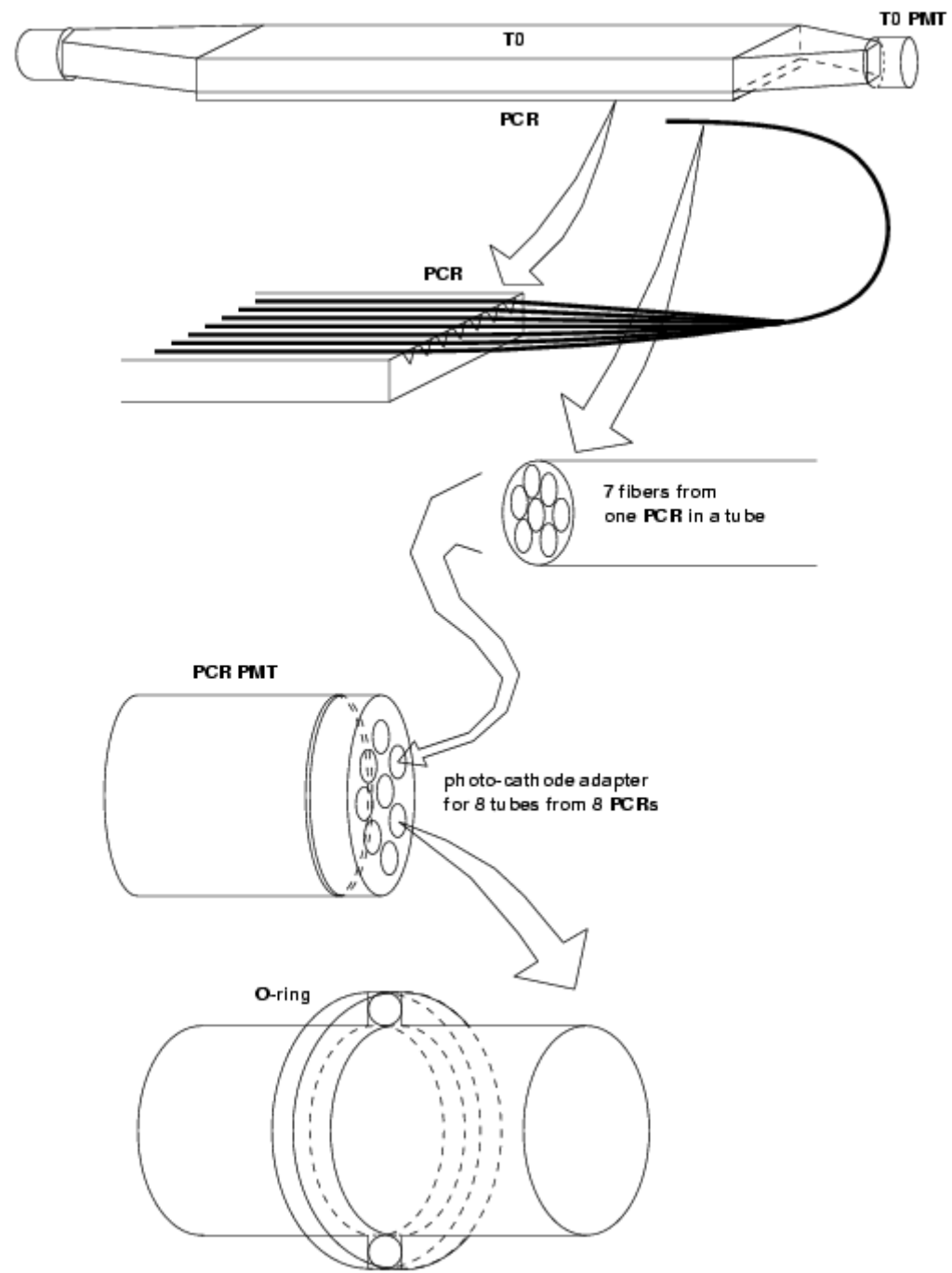
If yes, let's continue to do it,
if not, stop here.

Installation steps in 4 shifts (Susumu.S and Brendan.F)

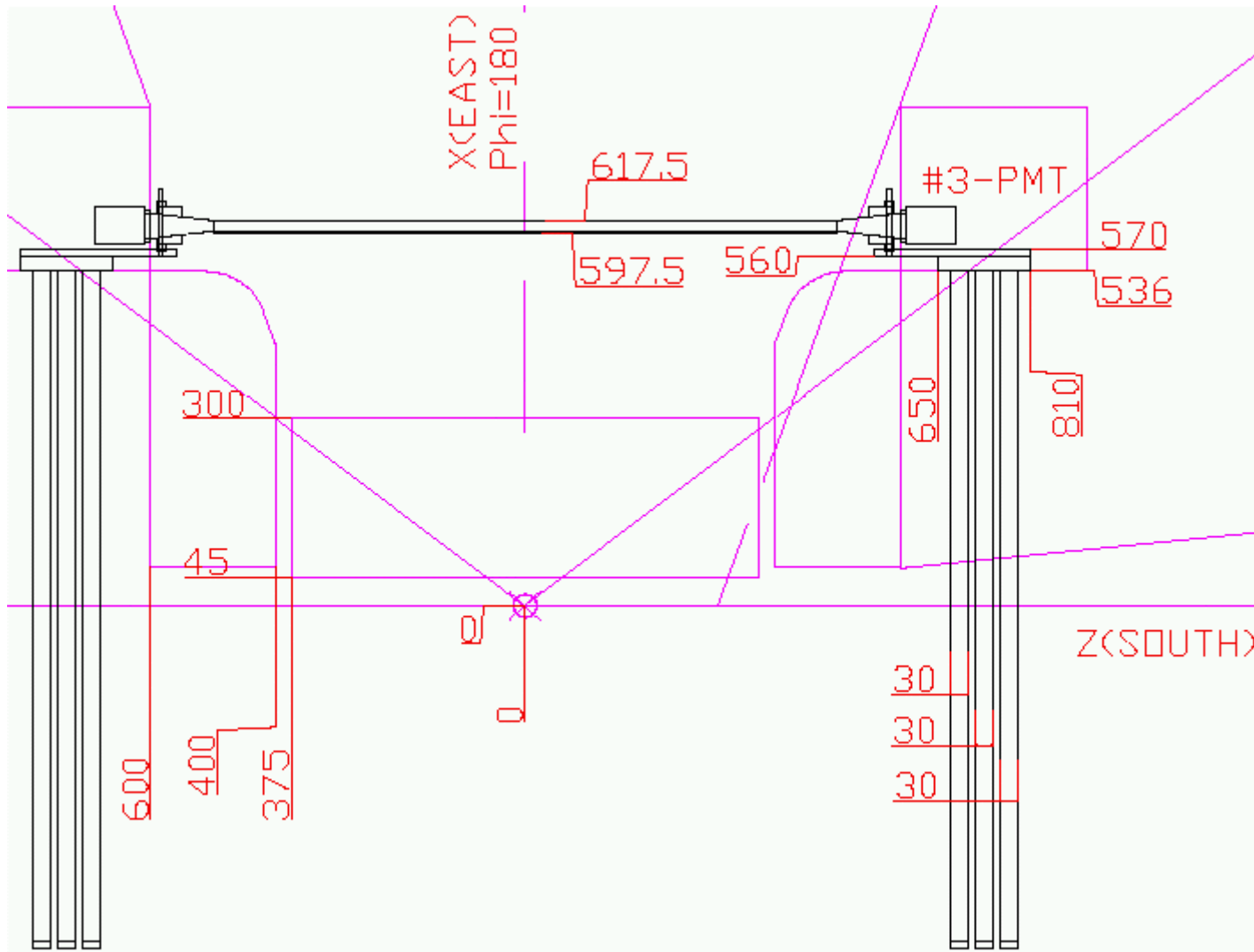
- (1) attach bands to the nosecone (5hours)
- (2) adjust alignment of south/north bands (2 hours)
- (3) fix 2 common platforms for 8 PMT supports (1hour)
- (4) attach 4 edge PMT supports to the platform (1hour)
- (5) check south/north phi with 2 dummy pipes (2hour)
- (6) attach other PMT supports to the platform (2hour)
- (7) mount T0 with PCR one by one (6 hours)
- (8) connect all fibers of PCR to PMT (2 hours)
- (9) installing signal and HV cable (3hours)
- (10) Check signals (2hours)

- (a) All the steps will be exercised with dummy real size nosecone model in Tsukuba.
- (b) Carrying the parts into the IR will be tested with dummy parts especially for the band and T0.

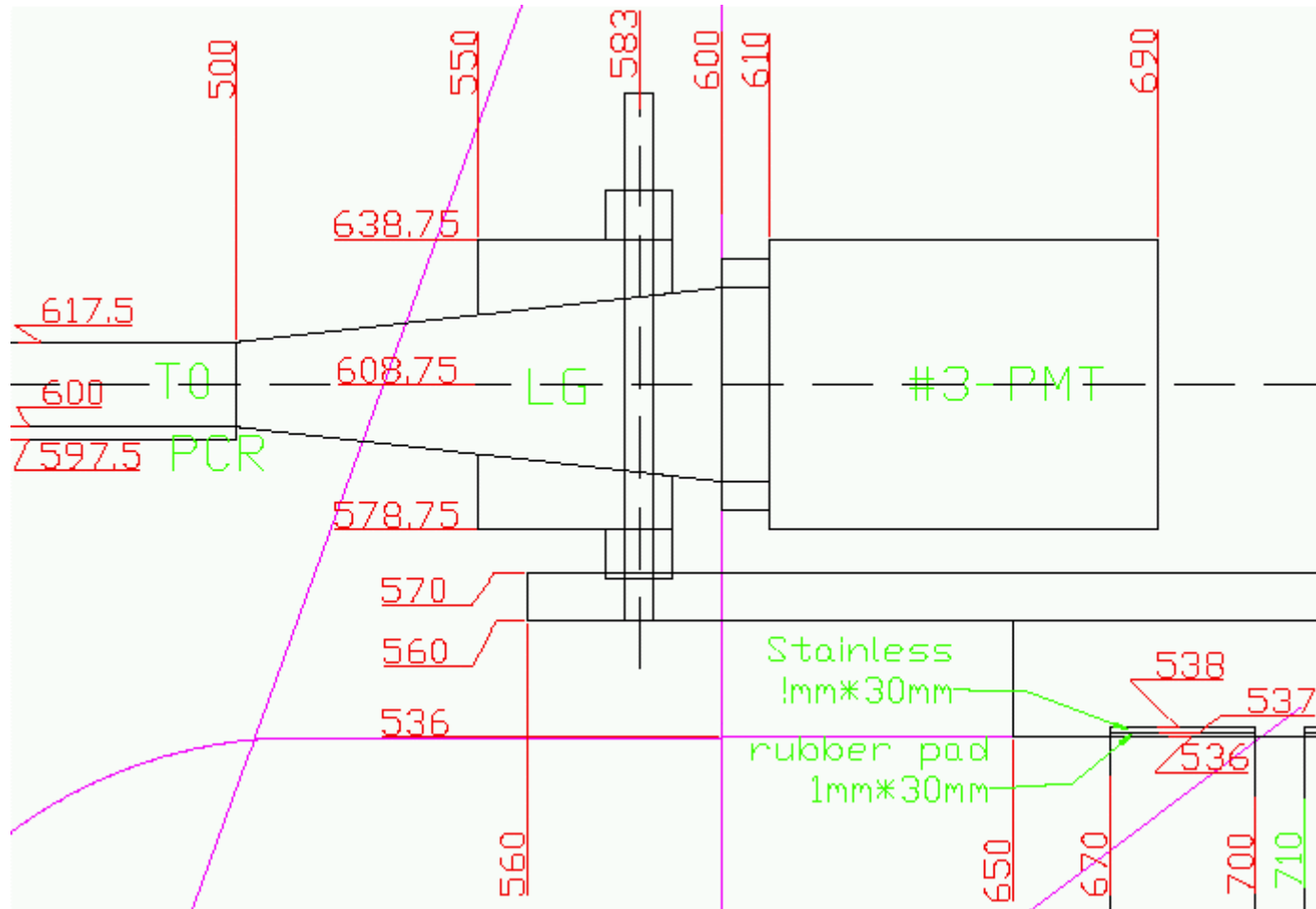




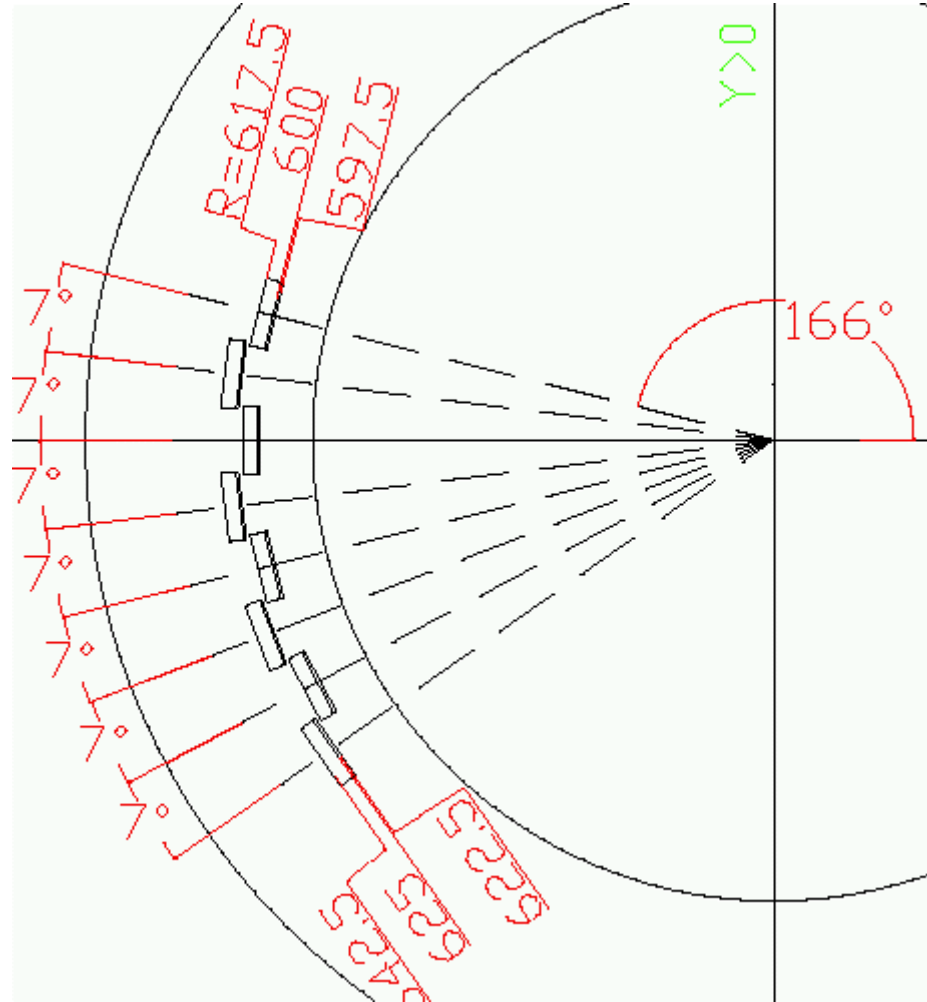
Hiroshi.T



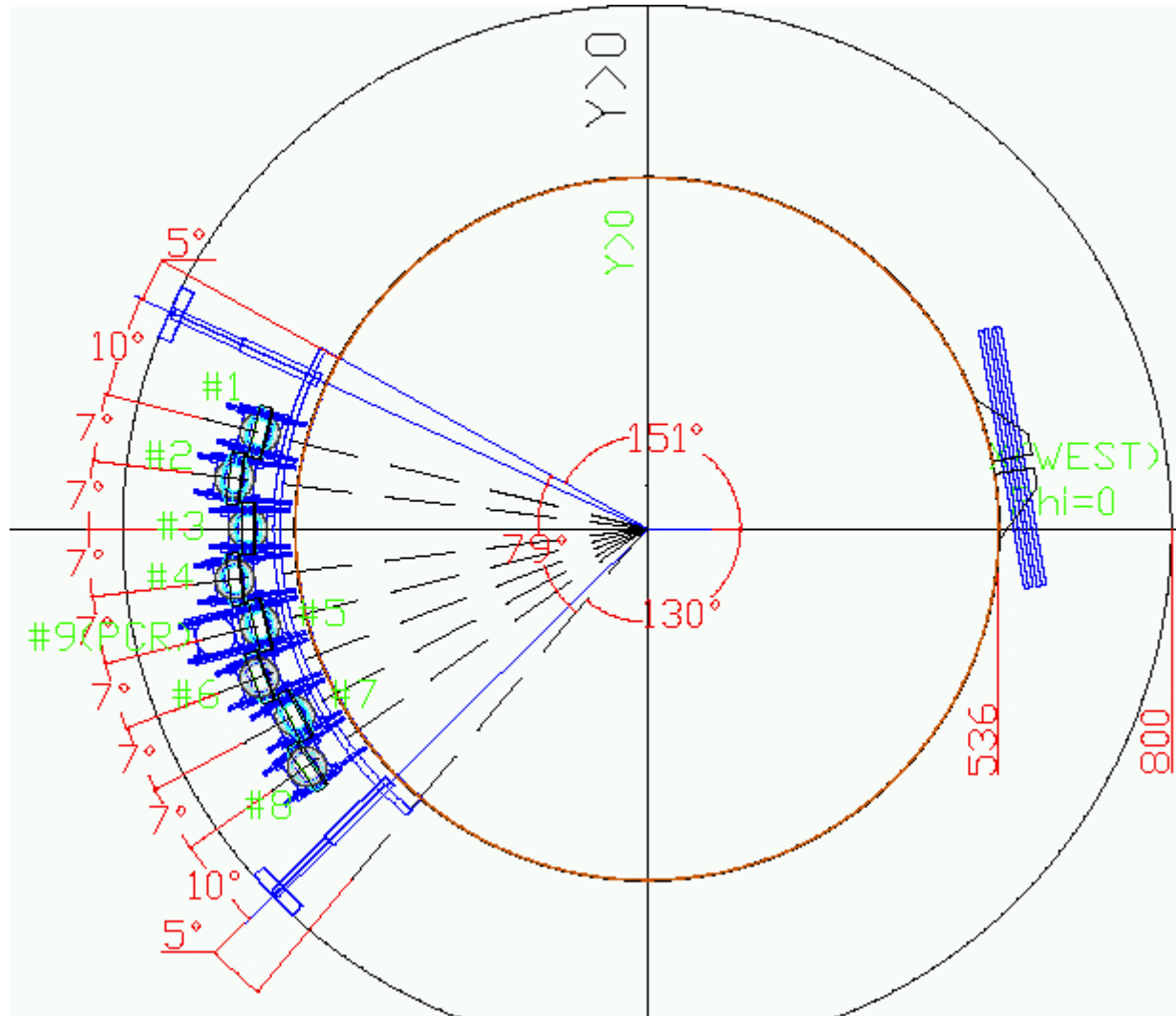
Hiroshi.T



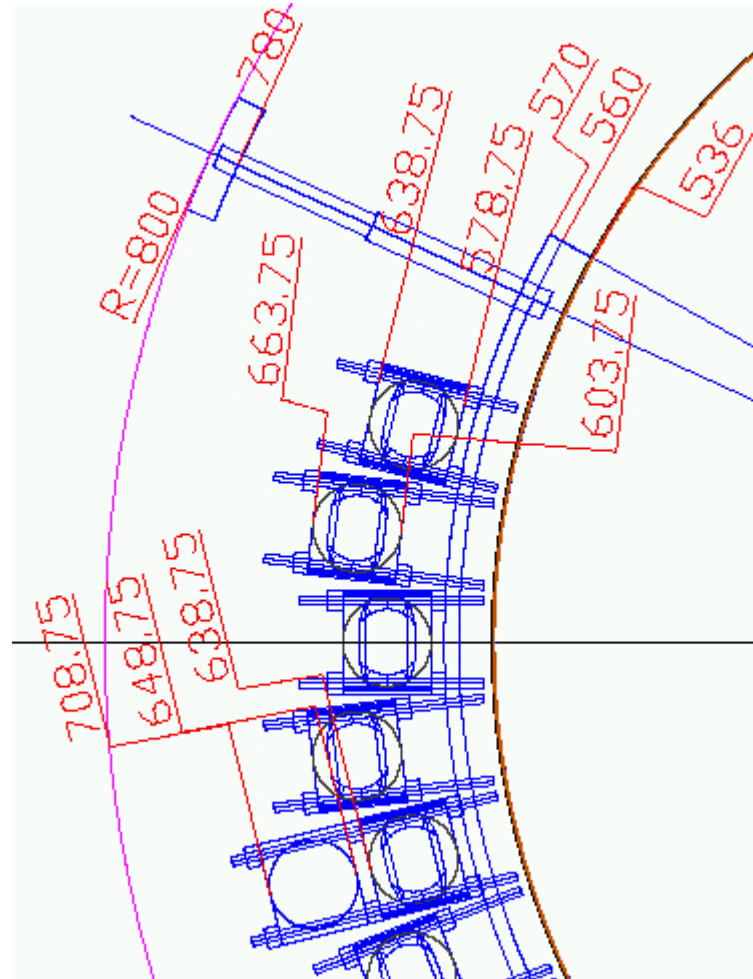
Hiroshi.T



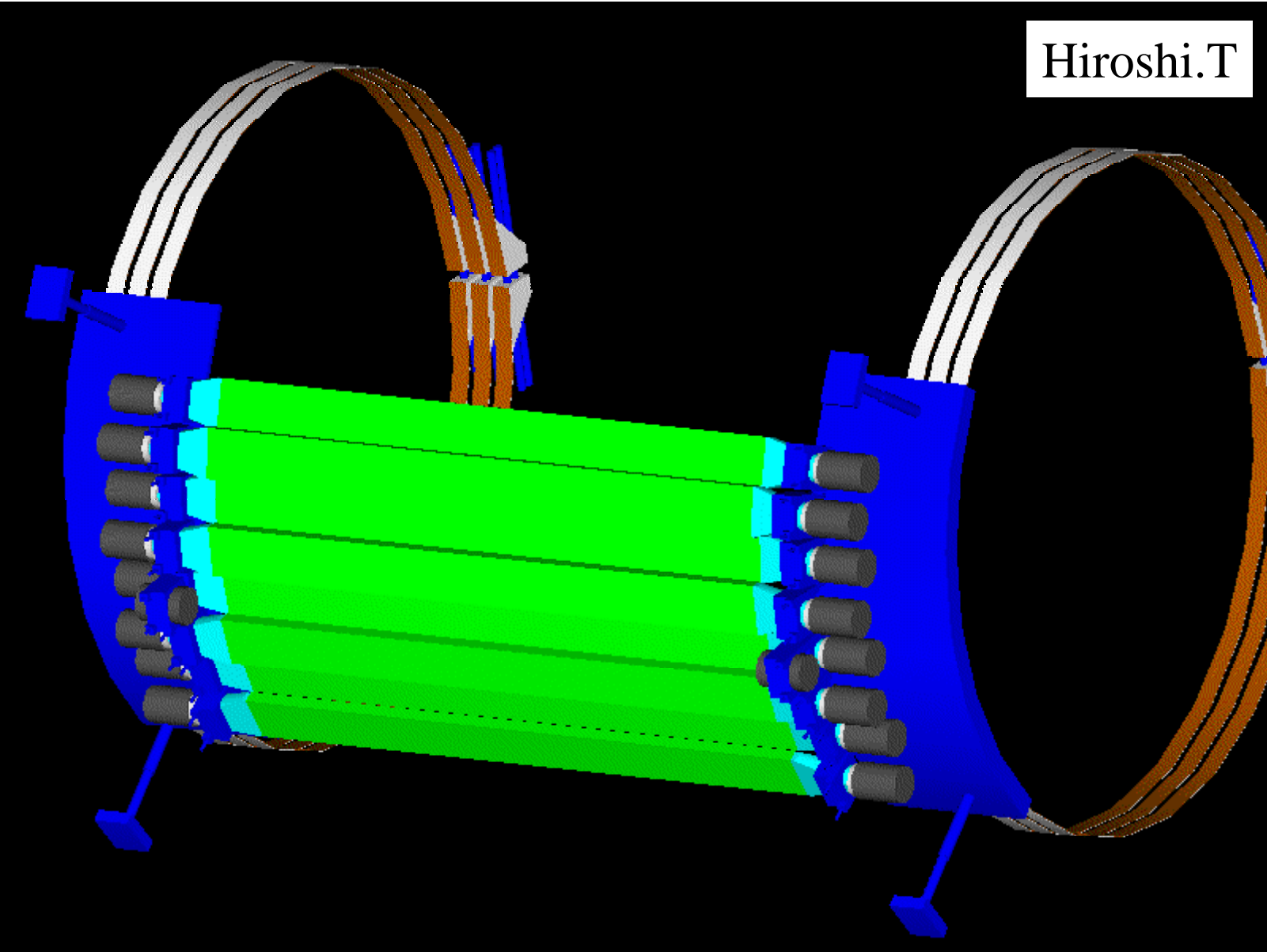
Hiroshi.T



Hiroshi.T



Hiroshi.T



Hiroshi.T

