

Comment on the Experimental Study of Emittance Growth in ATF EXT in Nov/Dec 2007

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Orbit Bump
Wire Scanner Measurement
Comment in General

Orbit Bump

SLAC proposal(ATF2 meeting 05/Sep./2007)

Goal

Making orbit bump in EX septum area, check orbit dependence of emittance.

Orbit bump

In order to close the bump just after EXT septum, bump in DR is required.

Hardware requirement

Additional H and V corrector.

H corrector is also required for Fast Kicker study and will be installed at the beginning of Nov. We have V corrector and can be installed then. But KEK does not have PS for it.(Naito)

Notice!

In ATF spring run, orbit bump in INJ/EXT area was studied for FK. DR H bump was limited from +1mm to -2mm for injection mode. The bump was made by 4 correctors.

Physical aperture of DR : 14 ϕ (septum area), 16 ϕ (kicker)

Orbit Bump(cont.)

What I most worrying about is that the range of the bump is so limited. Need maybe 1-2 shift to check it.

In our case, the bump shape is different. And in case that the injection is difficult, we can try to make orbit bump also in BT(M.Woodley).

Monitoring the beam orbit

In the bump of EXT, there are two button BPMs, however, which are not expected to be available due to noisy environment.

Do we need to measure orbit? If yes, how?

DR orbit measurement is maybe OK.

EXT orbit measurement: measurement the down stream orbit, with the EXT bump corrector ON/OFF. Then fitting the data might give the orbit information.

WS measurement

Before the measurement

EXT must be well tuned.

Orbit correction

Dispersion correction

Maybe it will take a few hours.

WS measurement

First we need to find the beam with wire. It will take a few ten minutes, if we will be lucky.

Usually we measure 5 times for one wire to estimate the errors.

The measurement will take about 10 minutes. If we use 5 WS, it will take about an hour.

In case we do not have time, we can use 3 WS which is the minimum number to estimate the emittance. Furthermore, if we do not need the absolute value of the emittance, one WS will do. Then we can take emittance (beam size) behavior data changing some variables (e.g. orbit bump).

If we need measure DR emittance, contact Y.Honda(LW) or H.Sakai(XSR).

General Comment on ATF Experiment

We have 6 weeks operation time in Nov/Dec 2007.

And so many collaborators will visit ATF then,

LW, nano BPM, DRBPM,...

In order to share the beam time effectively, we need to estimate how many shifts we need and to ask coordinator(K.Kubo) before the visit.

At ATF operation, we have 'shift leader' and 'sub-shift leader'.

One of them is KEK staff, and one of them can handle the beam at least.

ATF Meetings

Monday meeting : Every Monday pm1:00- at KEKB control building meeting room
pm1:00-pm1:30 hardware meeting(in Japanese), pm1:30- physics and planning(in English meeting)

ATF2 Meeting : Every Wednesday pm2:30- at 4th floor meeting room of building 3
ATF2 matter

4:30 Meeting : Everyday(during operation) pm4:30- at ATF control room
shift report and scheduling