

***Discussion of the priority and schedule
related to ATF2 Goal 1 studies***

Toshiyuki OKUGI, KEK

2014/ 2/ 13

ATF2 project meeting, KEK

Required Performance for Beam Instrumentations

IP-BSM

Fluctuation of the modulation at same condition ; $< 5\%$??

Maximum modulation for 174 degree mode ; $C > 0.9$??

IP-BPM

Resolution ; $> 20\text{nm}$

Dynamic Range; $\pm 30\mu\text{m}$

Bunch Charge ; $N=1\text{e}9$

$N>1\text{e}9$, if we solved the intensity dependence problem

Study Items about ATF2 goal 1

Study with 10x1 optics

The difficulty of the vertical beam size tuning at ILC IP is comparable to ATF2 10x1 optics.

0-1. Improvement of IP-BSM stability

0-2. IP-BPM should be available to the ATF2 online monitor.

1-1. IP beam size tuning with 2nd order knob (IP-BSM should be stable)

1-2. Jitter subtraction at IP (IP-BPM requirement 10-20nm resolution with +/-30um dynamic range)

1-3 Study of the head-tail offset at IP (IP-BPM pickup, C-band RF kicker)

Study with 1x1 optics

The difficulty of the horizontal beam size tuning at ILC IP is comparable to ATF2 1x1 optics.

But, the difficulty of the vertical beam size tuning for ATF2 10x1 optics is much difficult to ILC .

Furthermore, the large beam tail s are expected for ATF2 1x1 optics.

1. Octupoles will help the tail folding ?? (E. Marin will be proposed at TB&SGC meeting on 2/13)

Future study

Study of the intensity dependence

High intensity IP tuning is not only important to investigate of the source of the intensity dependence, but also important to improve the resolution of IP-BPM (important to ATF2 phase 2 study).

1. Shielding the vacuum pumping port. – ready at nex or next next week

2. Wakefield free steering (Y.Kim and J. Snuverink will be proposed at TB&SGC meeting on 2/13)

Other study items ...

Jitter source study -- last week of Feb. or first week of Mar

Propagation the jitter (FONT group)

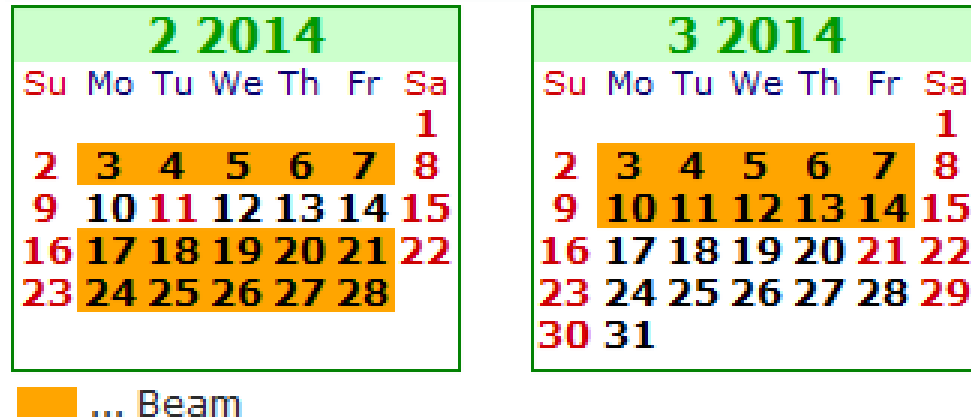
Visit schedule

Juergen and FONT (Jitter source) – end of Feb. or March

Oscor(IP-BPM) – May and June

Alexis (IP-BPM) – 2months

Beam Schedule in February and March



Study Items

IP-BPM ; Performance study

Preparation to be used to goal 1 study

IP-BSM ; Recovery to last spring run stability

Phase jitter study

Study with 10x1 optics ; strongly depends on the IP-BPM, IP-BSM

Jitter source (Juergen; end of Feb./first week of Mar.)

Jitter propagation

head-tail offset, if kicker available

Intensity Dependence ; wakefield free steering, shielding of port

Beam Schedule from April to June

4 2014						
Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

5 2014						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

6 2014						
Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

 ... Beam

Study Items

IP-BPM ;

IP-BSM ; Stability improvement

Study with 10x1 optics ; Jitter propagation

Intensity Dependence ;