



Summary of the commissioning runs

- brief report of October runs and some inputs for the Nov/Dec planning –

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ATF session on LCWS13, Tokyo Univ., Nov. 13, 2013



Commissioning Runs in October

- **Two weeks**
- **Re-establish the multi-bunch/multi-train beam for the radiation safety inspection**
- **Commissioning of the new IP equipment**



Re-establish beam for radiation inspection

- **KEK should have the radiation safety inspection every 5 years.**
 - It will be done on December 4th, 2013.
 - We need to operate more than 20% of approved max. beam power; i.e., at least 40 mA in DR and less than 4 uSv/h around the radiation shields.
 - **Multi-bunch/multi-train beam condition was re-established in October**
 - Recent years ... single bunch (3 mA in DR) for ATF2 studies
 - Stable multi-bunch beam needs careful tuning of RFgun, beam loading in LINAC and injection to DR.
 - **We need to confirm this condition every week to ensure the beam operation for the inspection on Dec 4.**
 - **It may use a half shift in a week.**
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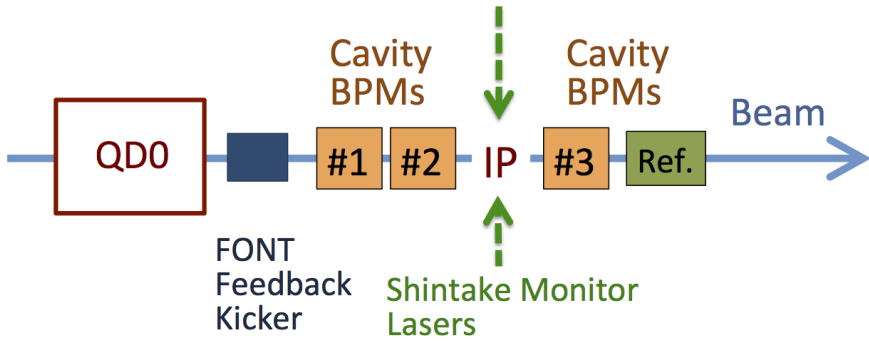


Commissioning Runs in October

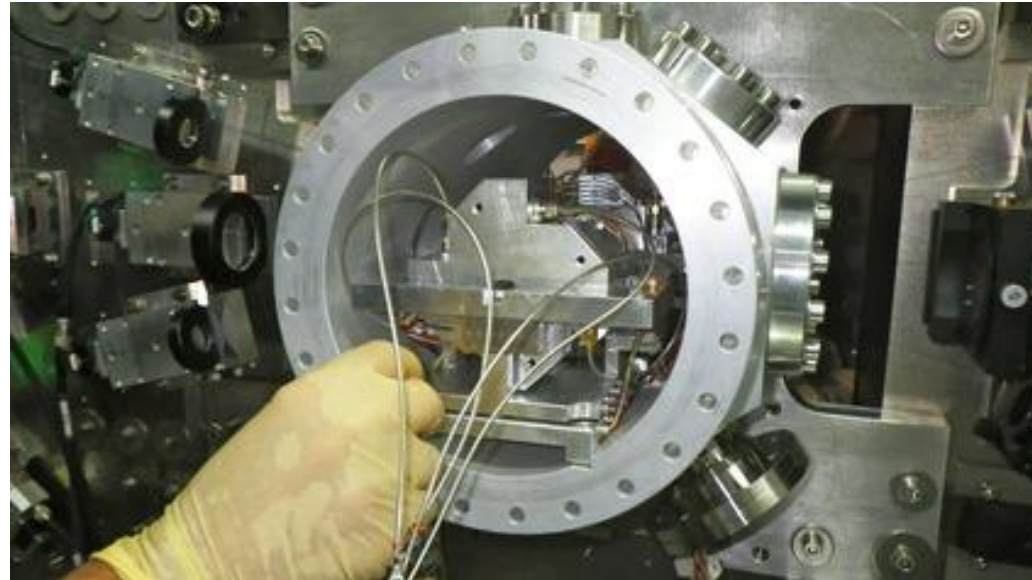
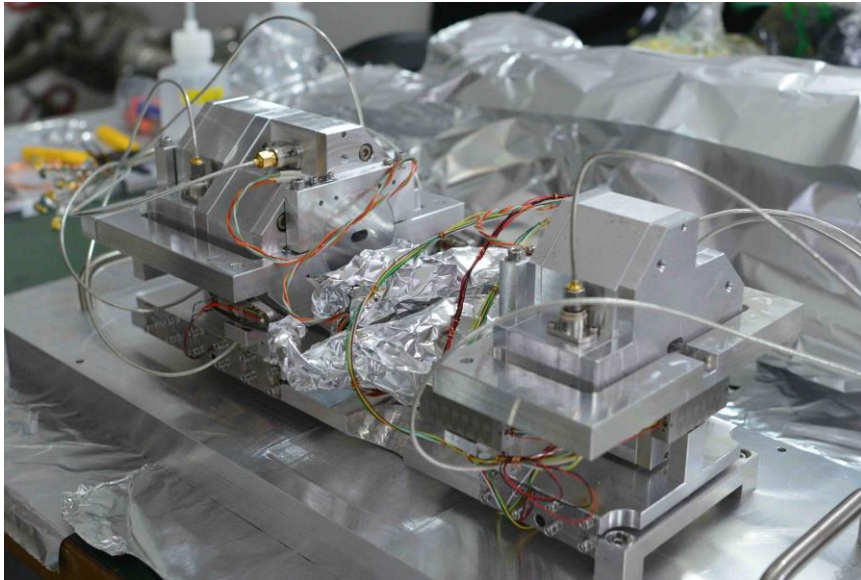
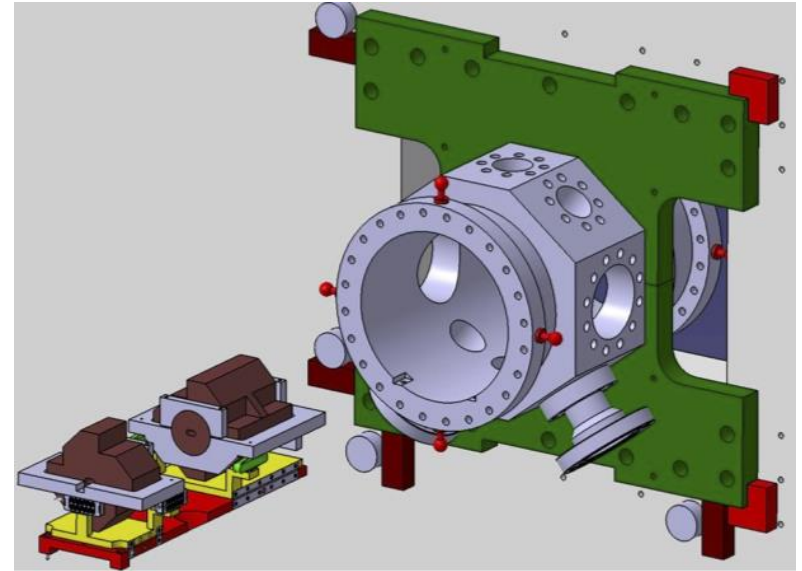
- Two weeks
- Re-establish the multi-bunch/multi-train beam for the radiation safety inspection
- **Commissioning of the new IP equipment**
 - Three low-Q IP-BPMs with piezo mover
 - KNU front-end electronics for IP-BPMs
 - Adjust the IP chamber (IP-BPMs) and Shintake monitor to the established beam orbit
 - » offset and dynamic range of BPMs



ATF2 IP-BPM installation



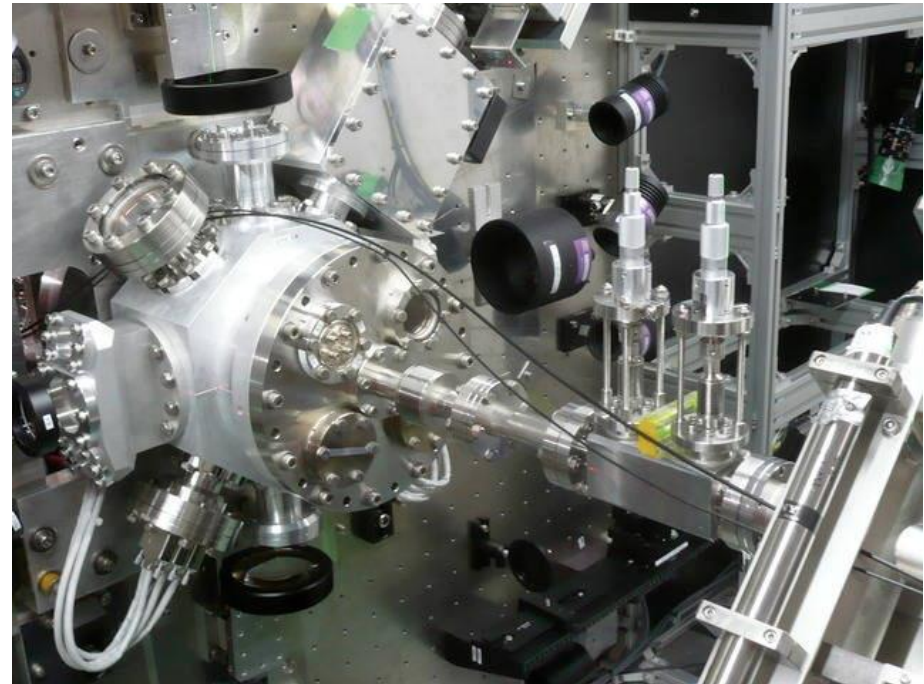
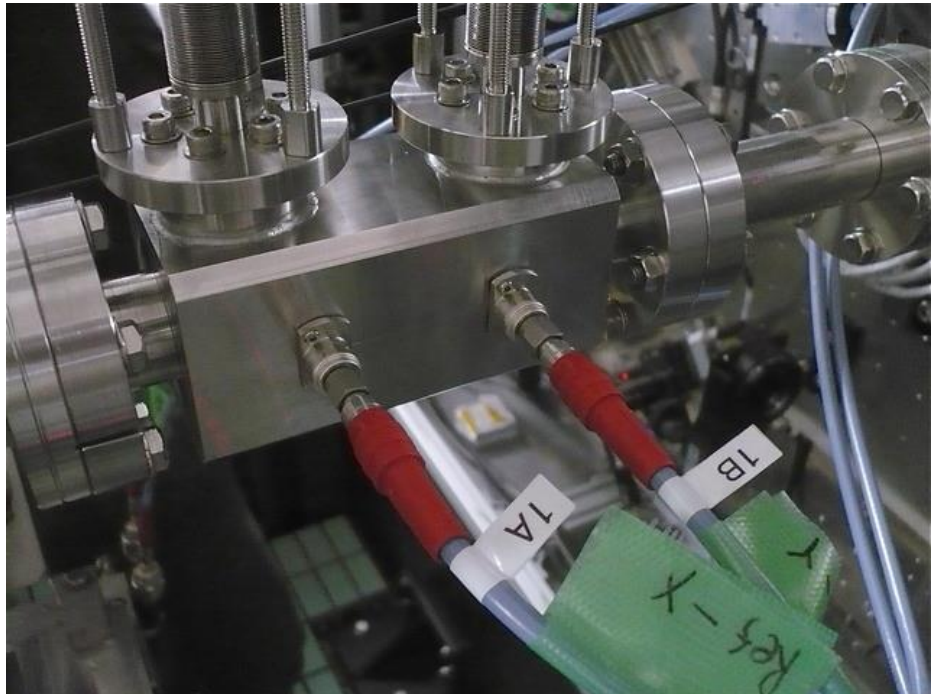
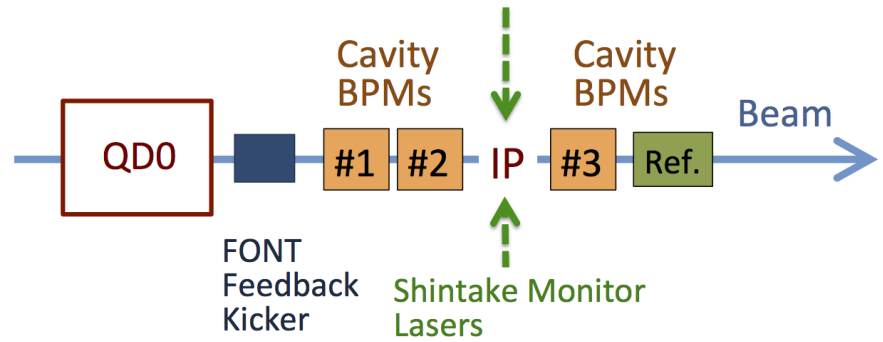
Sensor cavity





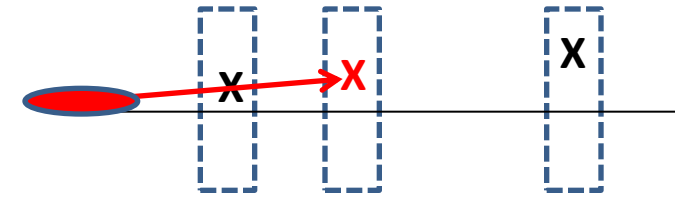
ATF2 IP-BPM installation

Reference cavity

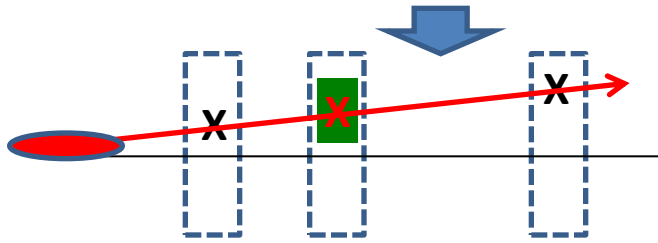




Position resolution of Low-Q IP-BPM-B

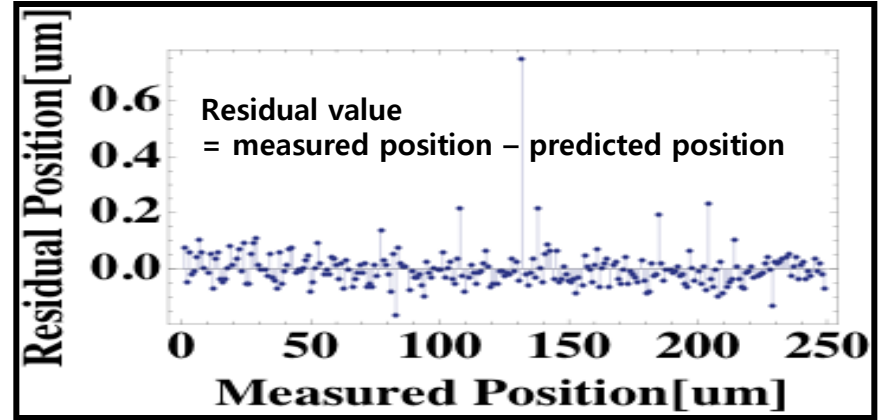
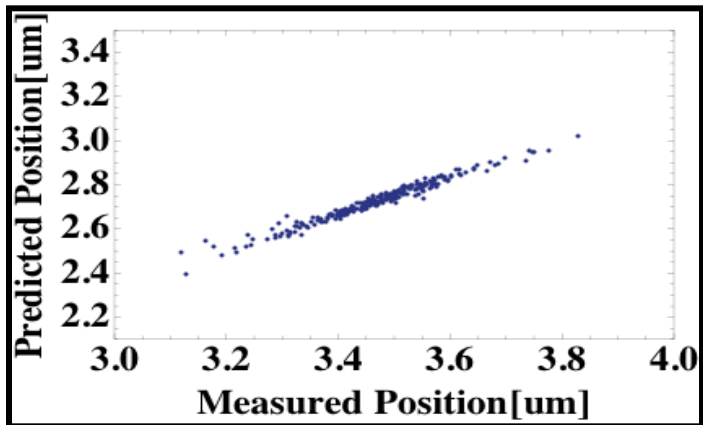


Beam position prediction

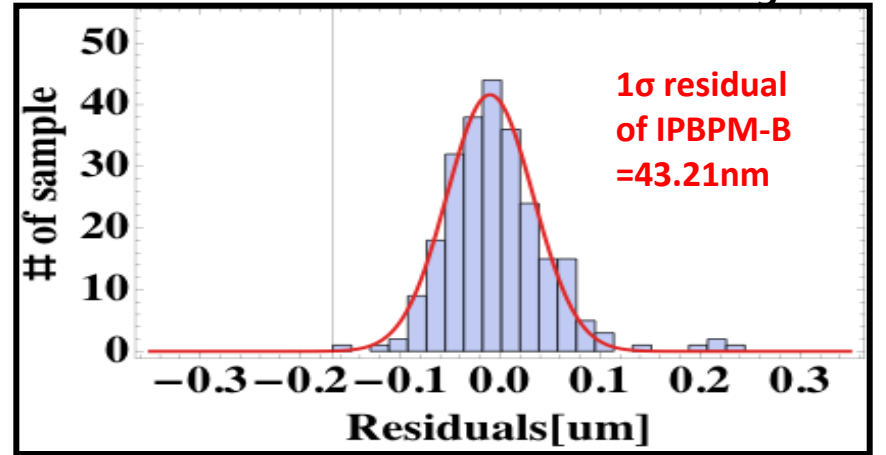


Beam position measurement

Convert to residual



Residual Gaussian fitting



$$\text{Resolution} = G. factor \cdot \frac{\text{Residual}}{\text{Calibration factor}} = 34.57 \text{ nm}$$



Alignment of IP, pitch

We aligned the IP chamber using the reference markers that defined by previous operation.

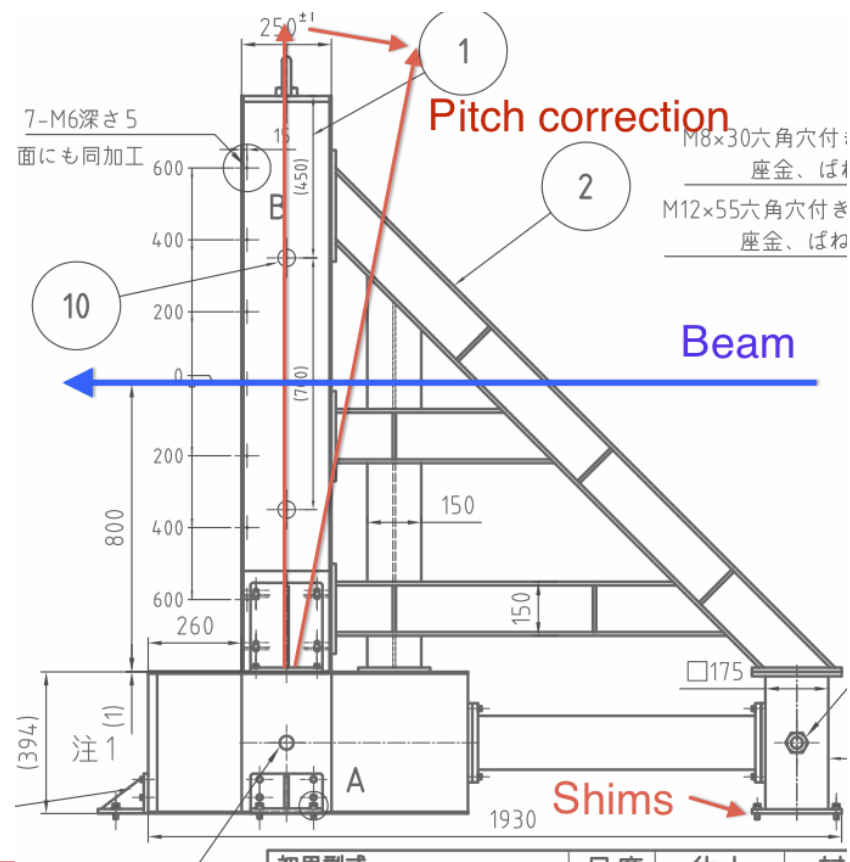
We expected some offset to the beam and planned to ask the IP-BPM signals.

After the recovery of the beam orbit around FD and IP, the commissioning of the IP-BPMs were done.

IP-BPMs suggested the pitching down from #1 to #3 about 1.8 mrad.

It was due to the pitch of the vertical table supporting the IP chamber.

The correction was done by adjusting the shims for the vertical table support.





Alignment of IP, x,y

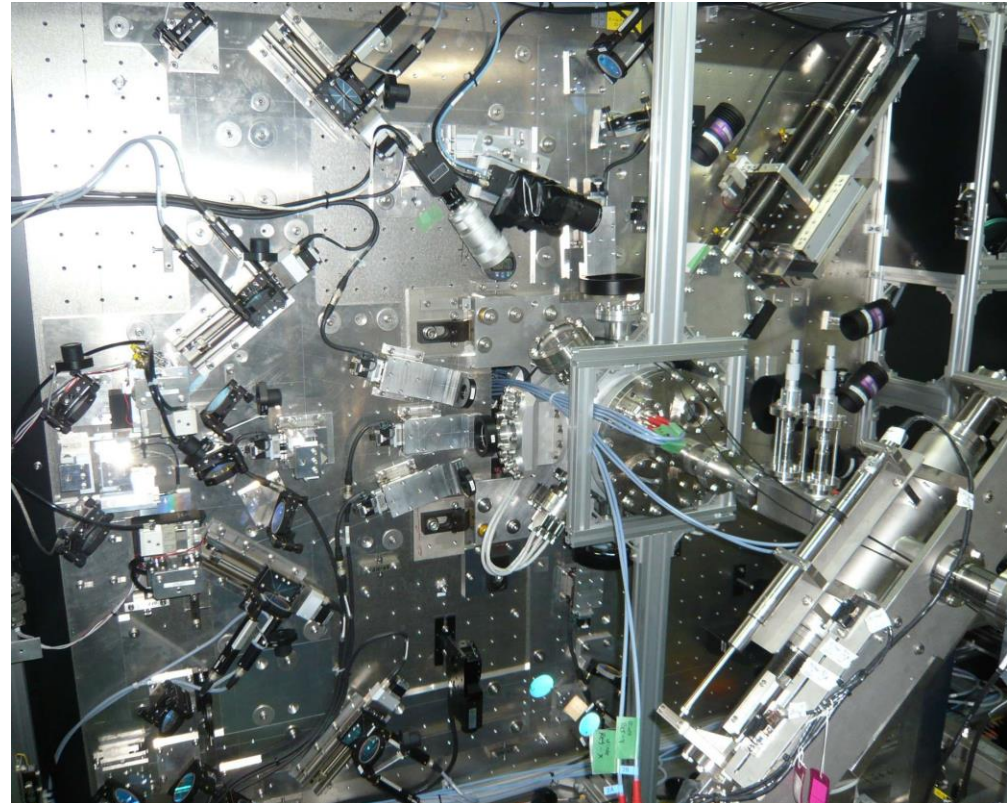
After correcting the pitch of the vertical table, IP-BPMs said they were 0.9 mm higher than the beam. We can not move the vertical table. All devices, IP chamber (BPMs) and the laser handling system of the Shintake monitor, were shifted by hand.

It may still have some offset to the beam.

We should repeat this positioning for the precise IP-BPM studies.

For 2 nm resolution,

- **IP-BPM dynamic range $\sim 5 \mu\text{m}$**
- **BPM mover stroke $\sim \pm 150 \mu\text{m}$**



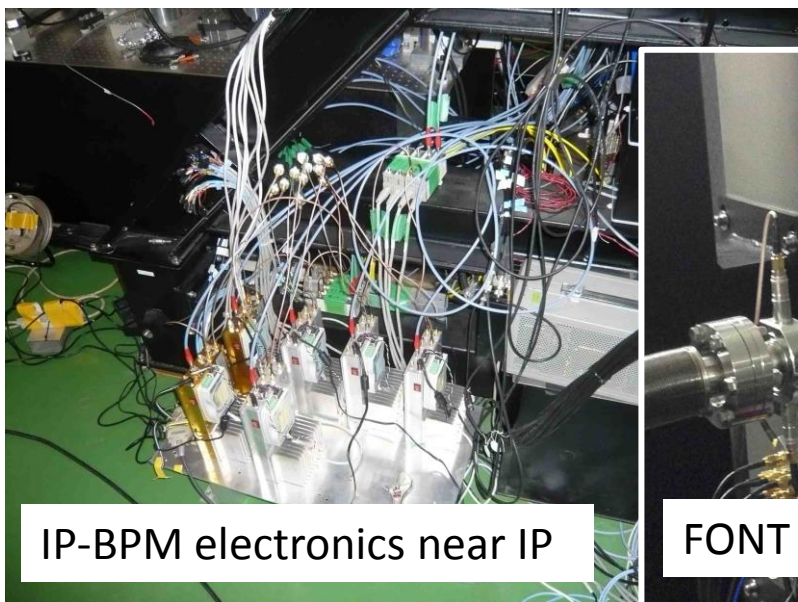
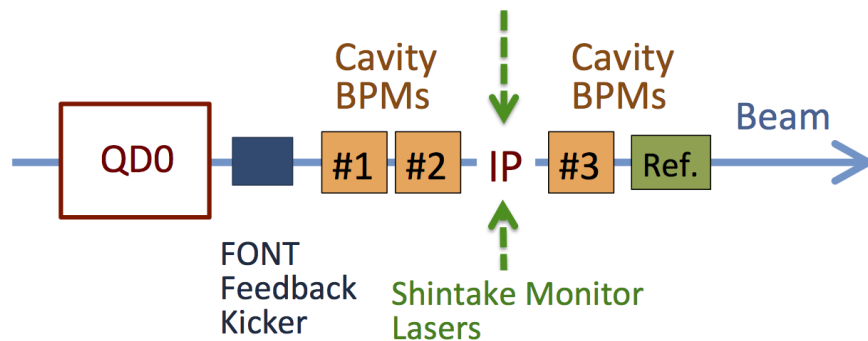


**for the discussion of November/December
runs**

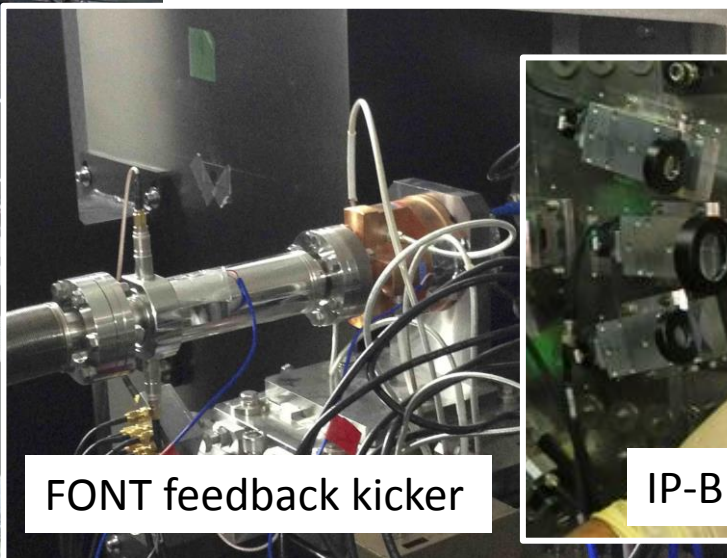


IP-FONT

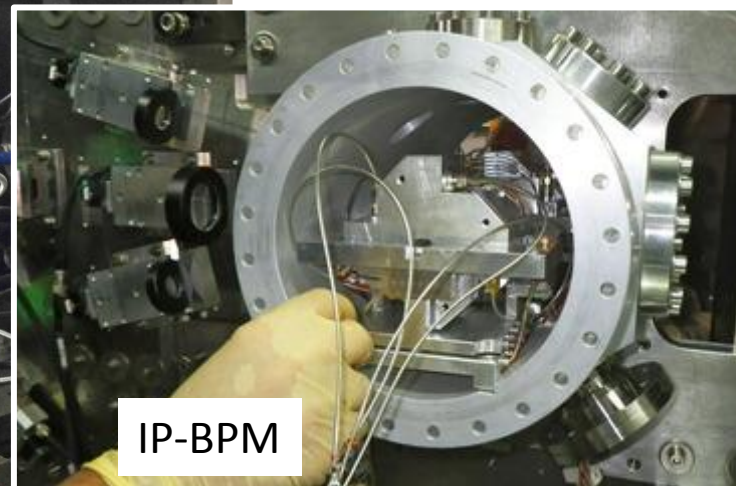
- We are interesting to see the new IP-BPM signals by the combination of the KNU electronics and the FONT digitizer.
- It will be ready in next week.



IP-BPM electronics near IP



FONT feedback kicker



IP-BPM



What are planned in Nov/Dec runs?

- **4 weeks + a few days**
- Radiation inspection on Dec 5.
- **37 nm trials**
 - IP-BSM(Shintake monitor) commissioning
 - Wakefield studies
- **IP-BPM studies**
- **IP-FONT studies**
- In parasitic
 - Optical cavity studies by LAL in DR
 - **dedicated 1 shift/week in Dec.**
 - new Laser Wire commissioning in DR



ATF Operation Schedule 2013-14 Part1

Month	Week	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
2013	10	40		1	2	3	4	5	6
		41	7	8	9	10	11	12	13
		42	14	15	16	17	18	19	20
		43	21	22	23	24	25	26	27
	11	44	28	29	30	31	1	2	3
		45	4	5	6	7	8	9	10
		46	11	12	13	14	15	16	17
		47	18	19	20	21	22	23	24
		48	25	26	27	28	29	30	1
	12	49	2	3	4	5	6	7	8
		50	9	10	11	12	13	14	15
		51	16	17	18	19	20	21	22
52		23	24	25	26	27	28	29	

Beam

Beam

Holiday

LCWS2013



2014	1	1	30	31	1	2	3	4	5	
		2	6	7	8	9	10	11	12	
		3	13	14	15	16	17	18	19	
		4	20	21	22	23	24	25	26	
		5	27	28	29	30	31	1	2	
	2	6	3	4	5	6	7	8	9	
		7	10	11	12	13	14	15	16	ATF2 project & TB meeting
		8	17	18	19	20	21	22	23	
		9	24	25	26	27	28	1	2	
	3	10	3	4	5	6	7	8	9	
		11	10	11	12	13	14	15	16	
		12	17	18	19	20	21	22	23	
		13	24	25	26	27	28	29	30	
	4	14	31	1	2	3	4	5	6	
		15	7	8	9	10	11	12	13	
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		22	26	27	28	29	30	31	1	
	6	23	2	3	4	5	6	7	8	
		24	9	10	11	12	13	14	15	
		25	16	17	18	19	20	21	22	IPAC 2014
		26	23	24	25	26	27	28	29	
		27	30							