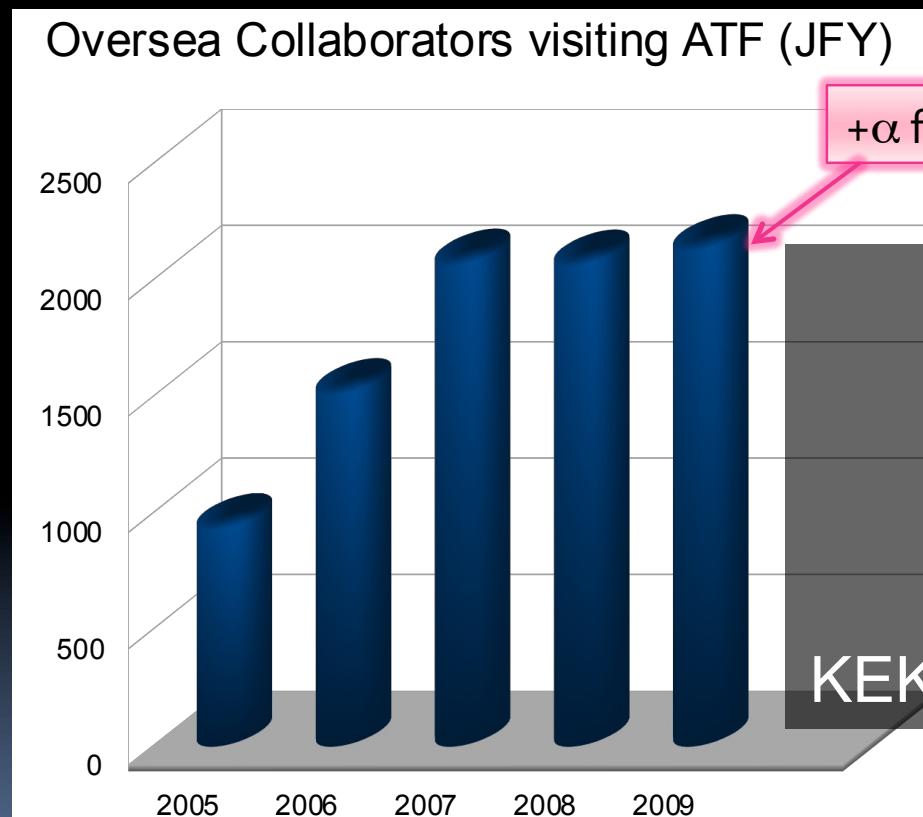


Nobuhiro Terunuma (KEK), 9<sup>th</sup> TB/SGCs Joint Meeting, December 16, 2009

# **HARDWARE STATUS SINCE JUNE 2009**

# Activity of the ATF

## International Collaboration



+α for Jan-Mar(2010)

Overseas collaborators

25 Institutes,

~70 people,

~2000 people-days

+

KEK and Japanese Universities(6)

# Maintenance Works in the summer shutdown

## 1. Magnet Power Supplies (1984~!!)

FANs, Interlock circuit, ...

## 2. Linac RF Modulator (1988~!!)

Klystron PS, Control Units, RF Amp, Charging, ...

## 3. Cooling Water System

Valves, Filters, Temp sensors, Leaks, ...

## 4. Air Conditioner for Electronics Huts

Here and there

## 5. Alignment of the beam line

DR, FF including Sextupoles and Final Doublet

## 6. More, ...

# New Devices installed in the summer shutdown

1. Additional RF Gun Laser: 714/2 MHz for 5.6 ns bunch spacing for Fast Kicker  
→ synchronization, Jan. 2010
2. Remote control of LINAC SLED tuner  
→ Increased the beam energy margin
3. SR transporting line at EXT  
(Mitsubishi-san, proposed in last TB)
4. New IP-BSM laser → laser power x3~4

# Studies after the last TB meeting

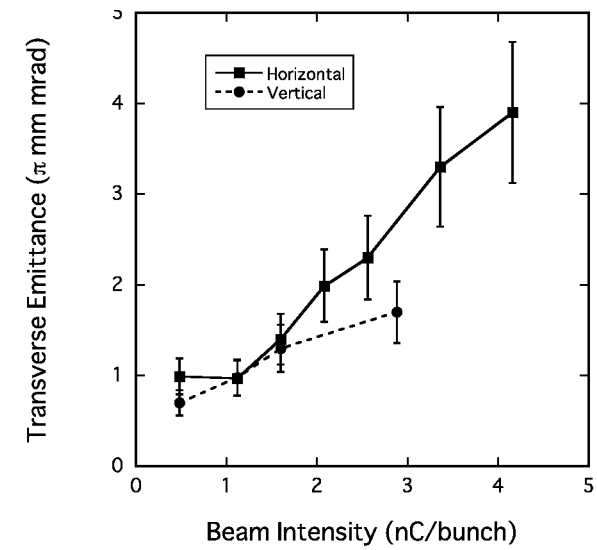
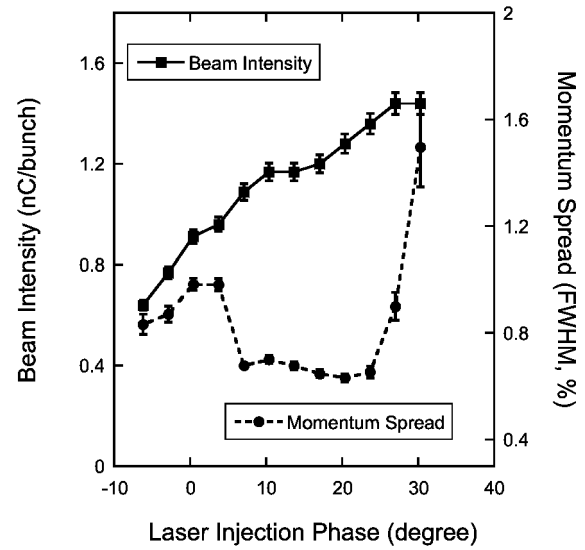
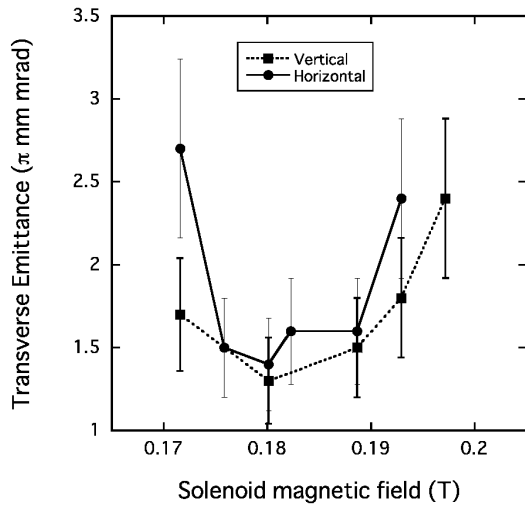
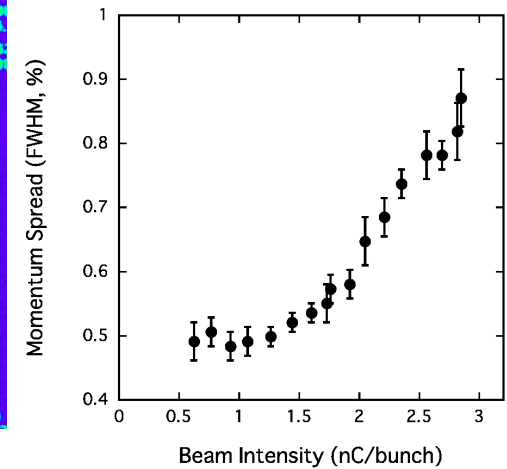
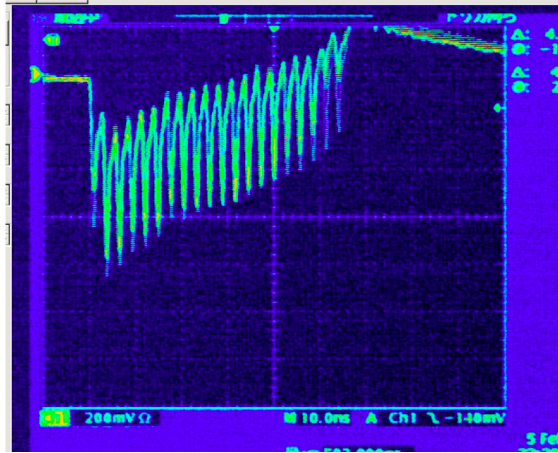
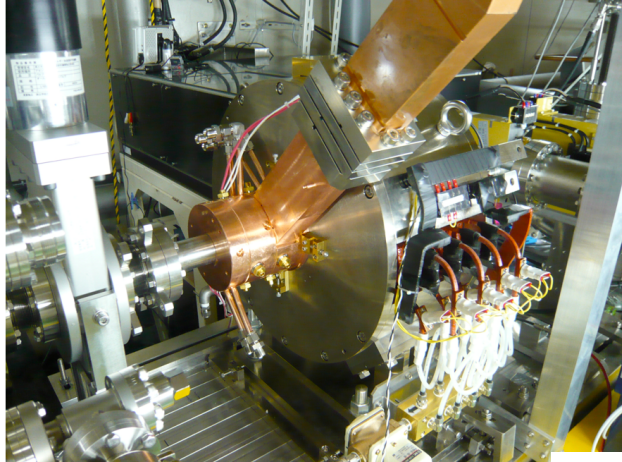
1. Fast kicker at EXT-FF: strip-line checkout
2. RF Gun performance (80MeV runs)
3. Monalisa vacuum system and vibration
4. Straightness monitor at FF
5. HLS at FF

## Continued Studies

Cavity Compton, FONT, Laser Wire, ...

# RF Gun Performance Study

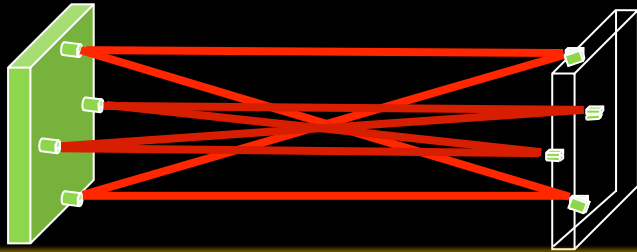
by 80MeV operation in June 2009



**Operation condition for ATF was optimized.**

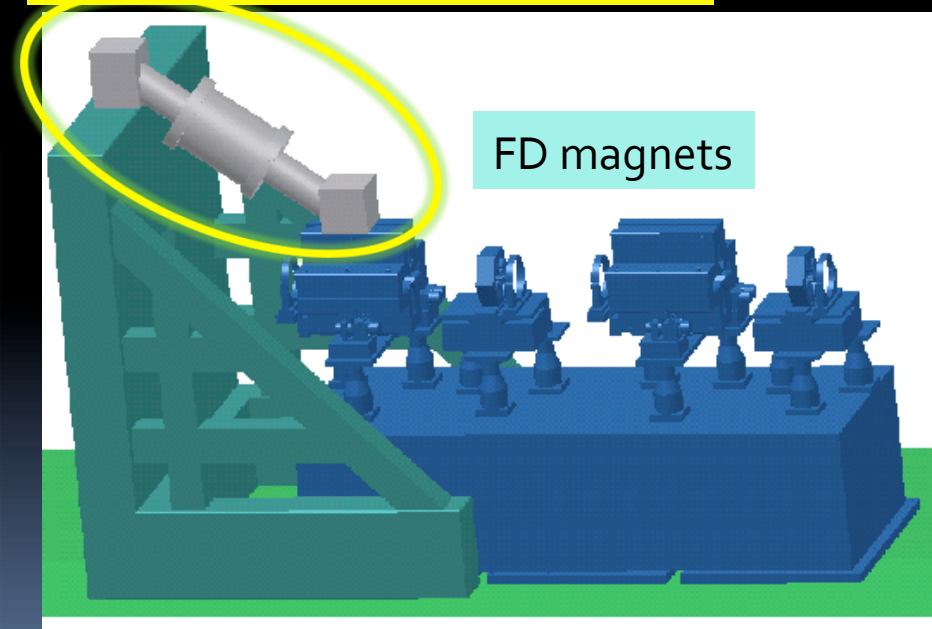
# MONALISA at ATF2

- **Monitor the relative motion between final focus quadrupole and the IP-BSM (Shintake Monitor).**
  - This avoids a false increase of the measured beam spot caused by motion of the Shintake monitor.



- Vacuum vessel of MONALISA was temporary installed to check the consistency with the FD+IP system, in July 2009.
- Re-installation with distance meters is not yet scheduled.

One active double bellow system



# Impact of Monalisa on vibrations

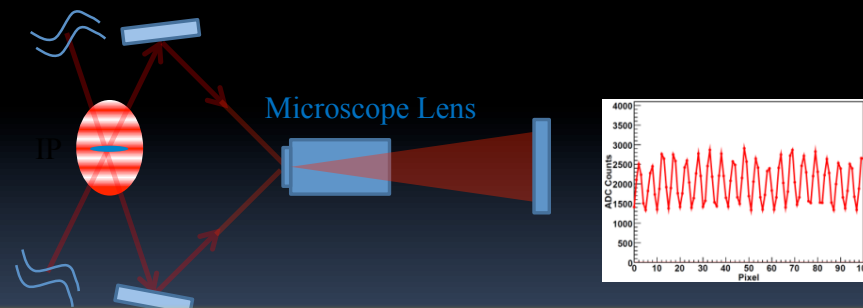
✓ With GM/flowing cooling water, relative motion of SM to QD0:

	Tolerance	Without Monalisa	With Monalisa (Press/No press)
Vertical	7 nm	5.0nm	5.7nm/5.8nm
Perpendicular to beam	~ 500 nm	16.7nm	16.7nm
Parallel to the beam	~ 10,000 nm	17.2nm	17.2nm



Vibration measurements between Shintake and QDo

## Phase Stability Measurement of IP-BSM

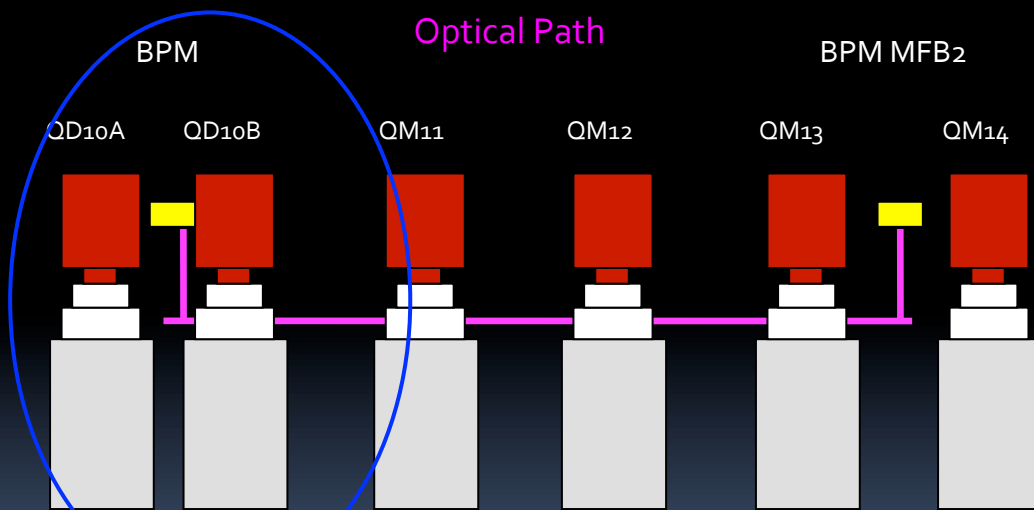


Results give the fringe position stability, 6 nm without MONALISA, 7 nm with MONALISA.

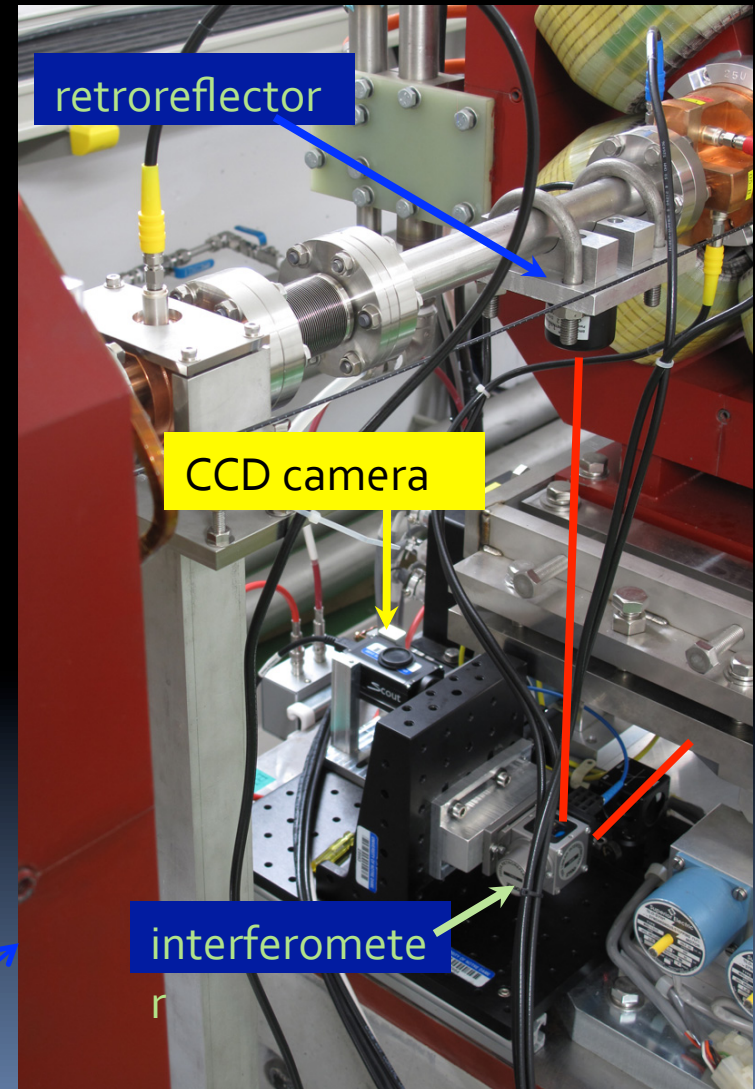


# Application of the Straightness monitor at ATF2 (Notre Dame Univ.)

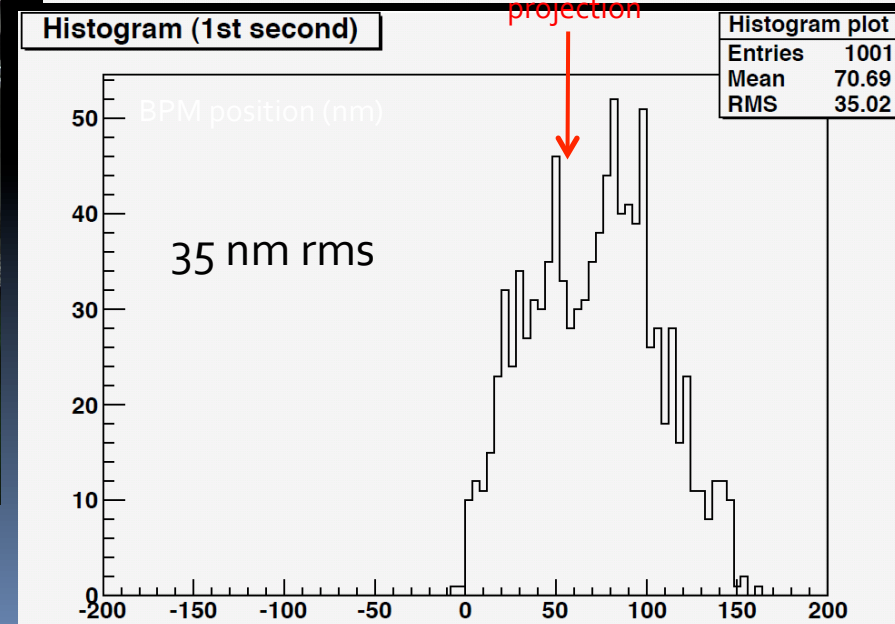
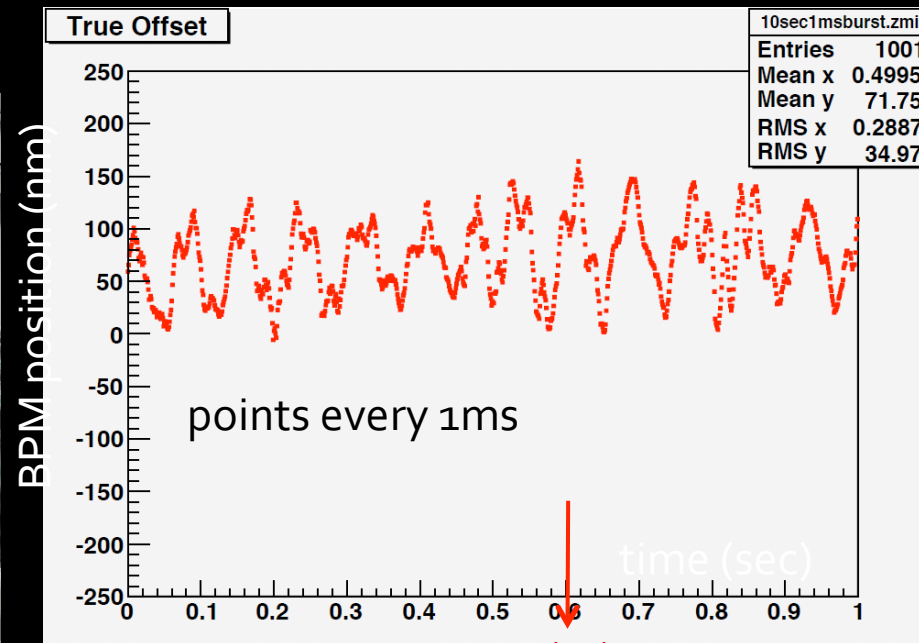
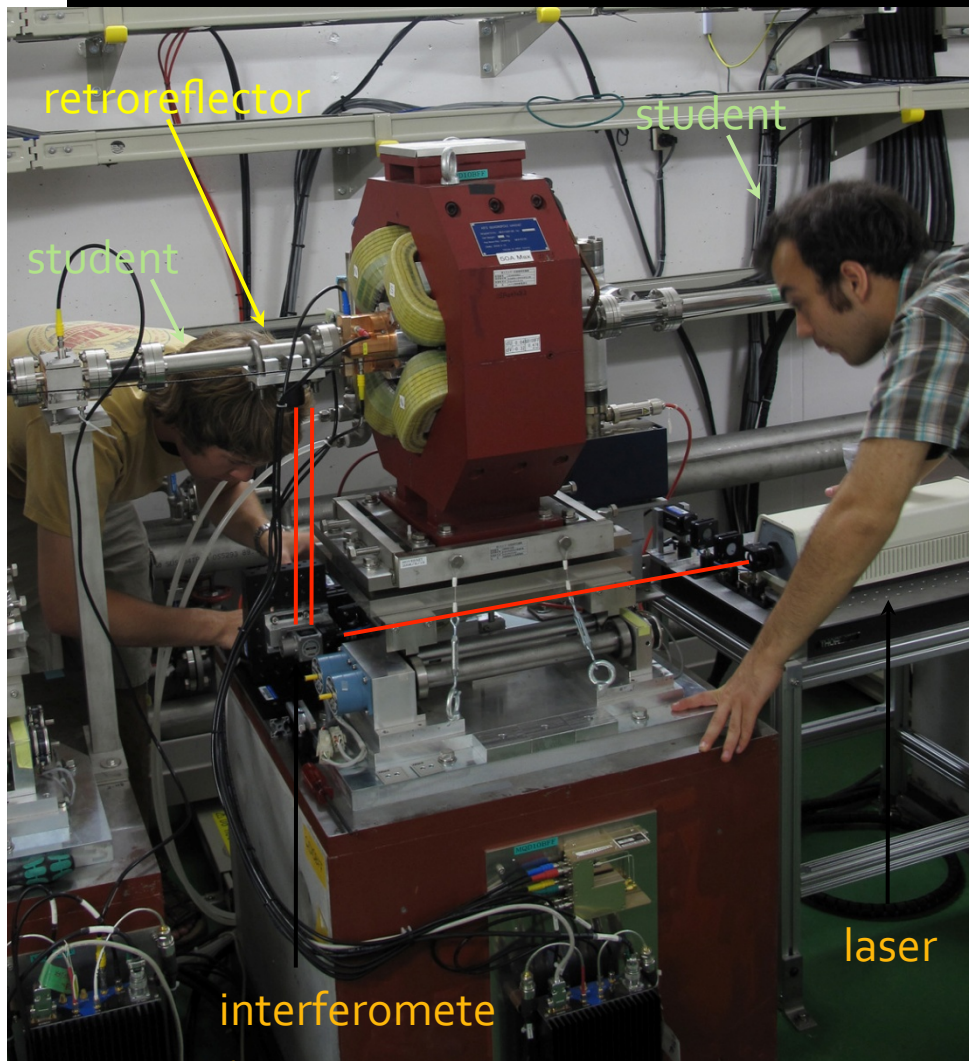
**Full System (Installed in Oct. 2009):**  
monitor relative (later, absolute)  
vertical positions of the two IP  
Steering feedback BPMs



**Installed in July 2009**



# Initial Data: BPM Vibration



# Major Hardware Changes scheduled after this meeting

## New bi-polar power supply for EXT steers

PSs (+-10A), 14 in total, will be delivered in next week.

They are same-type PSs that are already exchanged for FONT (ZH6X and ZV6X).

These will replace the old PSs (more than 20 years) and improve the control accuracy.

Replaced PS should be used as a spare for DR trims.

## DR-BPM upgrade for 1 pm

Some cables (LO,...) were already installed in DR during the summer 2009.

Phased installation by 4 BPM stations will be started in May 2010.

A month for installation and commissioning is planned.

## LCLS BPM Readout Electronics for EXT BPMs

They will be installed in February 2010.

## New OTR in EXT/FF

They will be installed in April 2010.