



Max-Planck-Institut für Physik
(Werner-Heisenberg-Institut)



ATF2: Status at MPI-Munich

BDS/ATF2 list

- Gouxing Xia (ATF) and I have registered to the ILC-BDS list so that we can keep up with your progress.
- The MPI has an active group working on future accelerating techniques:
 - PDPWFA
 - Muon cooling(where, as you know, "the achievement of small beams is as important as acceleration technique for future accelerators".)
- For the moment we will be "observers", until the manpower situation at MPI becomes clearer, and more may sign up for the ATF2 list in the meantime.

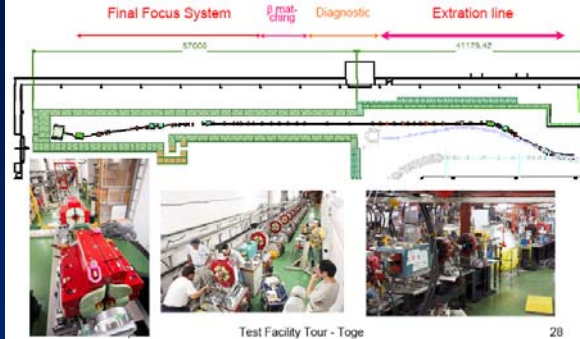
BDS/ATF2

- Although MPI cannot be an active collaborator at the moment, we have already contributed something...

Test Facilities World Tour

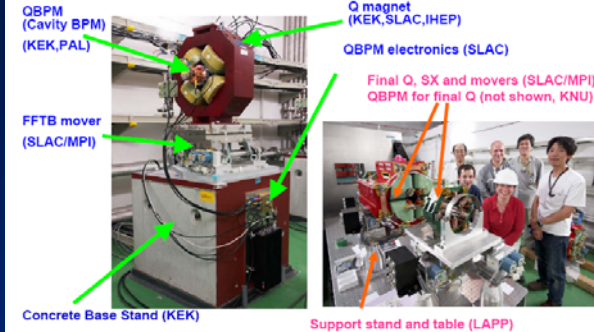
Nobu Toge (KEK)

ATF2 Layout



Test Facility Tour - Toge

ATF2 – International Collaboration



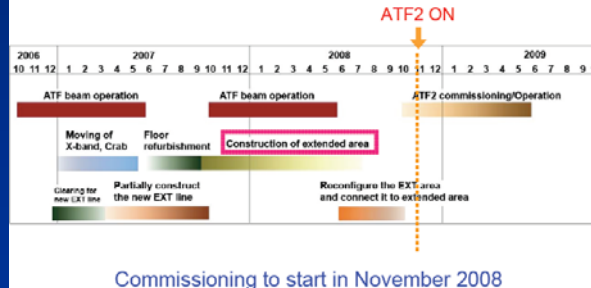
CLIC08 Workshop

Test Facility Tour - Toge

ATF2

- ATF2 is
 - a final-focus test beamline, as extended from the beam extraction line of ATF damping ring at KEK.
- Two main missions
 - Achievement of 34nm beam size (vertical)
 - Demonstration of a new compact final focus design, proposed by P. Raimondi and A. Seryi in 2000.
 - Maintenance of the small beam size (Ref: several hours at the FFTB/SLAC)
 - Control of the beam position
 - Demonstration of beam orbit stabilization with nano-meter precision at IP (Ref: beam jitter at FFTB/SLAC was about 40nm.)
 - Establishment of beam jitter controlling technique at a nano-meter level with ILC-like beam (2008 -?)

ATF2 – Research Program



Commissioning to start in November 2008

Focusing of Submicron Beams for TeV-Scale e^+e^- Linear Colliders

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 (Received 17 October 1996)

One of the challenges in the development of TeV-scale electron-positron linear colliders is to focus particle beams to extremely small sizes. Whereas the bunches in the Stanford Linear Collider (SLC) are made of multiple microbunches, those in future machines will need to be up to 300 times narrower. Focusing and collimating tightly focused beams require careful control and stabilization of magnetic systems, and precise control of accurate measurements of the properties of the beams. We constructed a prototype focusing system for a future linear collider: the Final Focus and Beam (FFTB) [1], which focuses 200 pC in one bunch (about 2000 electrons) at the end of the SLAC test ring. It accepts the SLC electron beam as input and is designed to produce a final spot at which the beam height is diminished by a factor of 200, to a size smaller than 100 nm.

The major goals of the FFTB include the focusing and control of the final focus of a three linear colliders. Most of the demands placed on the hardware in the FFTB result from the accuracy of the fields in the magnetic elements and their mechanical alignments are also similar to those expected at higher energies. While beam spots of a few to a few tens of micrometers in length will be required at a TeV-scale linear collider, the development of the SLC beam in the FFTB is in excess of that required for such a future machine; to the

initial alignment and corrections that must be done in the FFTB present a significant challenge and are in order for development.

The SLC damping ring can produce an electron beam with transverse emittance $\epsilon_{x,y} = 7 \times 10^{-10}$ m-rad, and the results presented here were obtained with 100 pC electron per pulse transported to the end of the test



FIG. 1. Location of the FFTB at the end of the SLAC SLC* ring.

CLIC08 WS
 14 OCT 2008

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We will be thinking about possible areas of interest in future; our contribution will depend on the manpower evolution here...