ATF-II Review by GDE

Marc Ross, (SLAC)
For GDE Project Managers:
Nick Walker and Akira Yamamoto
24 January, 2013
15th ATF2 Collaboration Meeting

Beam Test Facilities

- ILC – GDE Technical Design relies on results from beam test facilities
  - FLASH, STF, NML: High Gradient / High Current SRF Linac Operation and Control
  - CesrTA: Damping Ring Collective Effects
  - ATF / ATF-II: Creation and Tuning of nano-beams, including beam dynamics, instrumentation and feedback

ATF-II results

- ATF-II results support and advise the ILC Technical Design
  - Beam optics
  - Mitigation of aberrations
  - System Optimization
  - Technology Development

The end of the ILC Technical Design Phase

- Comprehensive ATF-II review will help us understand and allow us to explain the key contributions made at ATF-II to the ILC.
- Best way to 'hand-off' the GDE-related program carried out during the Technical Design Phase to the new organization, the 'LCC'.
- Begin the definition of a program for ATF-II within LCC
- Consider and understand our initial motivation and analysis in order to capture 'lessons-learned'.

ATF-II contribution to ILC TD

- There are many 'ATF-specific-issues',
- But key observations must be summarized and understood properly for future projects.
- ATF-II will help us improve the beam physics and engineering design of the ILC Damping Ring, RTML, BDS Accelerator Systems and the design of instrumentation, survey/alignment, magnet and special function technical sub-systems.
- In this way it is unique and very important.

ILC Project Advisory Committee

- NINTH MEETING OF THE ILC PROJECT ADVISORY COMMITTEE (PAC) was held 13-14.12.2012
- Report will be public in a few weeks
- Based on verbal closeout, we can expect ATF-II recommendation will be first or second:

PAC Closeout Notes: ATF-II

- Lyn Evans, 14.12.2012:

- KEK support for ATF2 infrastructure maintenance appears to be weak. It is often the case that infrastructure support is weaker for R & D facilities than it is for the production machines. This is the case for CTF3 at CERN. Generally, this is damaging to us (ILC) and should be dealt with.

- Poor quality magnets with high multi-pole content have been replaced at ATF2. The most serious of these was the final doublet horizontally-focusing magnet which was replaced by a magnet from PEP2.

- We need progress at ATF2. Achieving 70 nm beam spots will be a big step forward and will help the ILC effort.

The purpose of the GDE review of ATF is:

1) Evaluate and comment on progress made toward achieving the stated goals.

2) Comment on lessons-learned at the ATF beam test facility for the ILC complex and how these may be included in the ILC design.

3) Assess the readiness of the ATF complex toward achieving the goals, including, for example, understanding of beam dynamics and expected instrumentation performance.

4) Evaluate and comment on future plans.

1 ½ Day Comprehensive Review of ATF-II

Part 1 Suggested Agenda :
½ Day:

- Introduction by N. Terunuma
  Motivation for the 2012 run and new attempt for team-work operation,

- ATF-II beam optics G. White
  Beam design with trying to simulate the ILC beam condition and handling

- Beam tuning T. Okugi
  Summary of beam operation including previous effort through December run

- Results and discussions K. Kubo
  Achievement of 70 nm and discussion for future development

- Others

Review the beam physics details and performance expectations

Part 2 Suggested Agenda:
½ day

Stewart Boogert (beam position monitoring)
Alexei Liapin (wakefield calculation)
Mark Woodley (beam optics - including kicker magnet)
Angeles Faux-Golfe (beam emittance monitoring and optics matching)
Rogelio Tomas (beam optics - multipole analysis)
Phil Burrows (stabilization and prospects for Goal B)
Toshiaki Tauchi (Summary of lessons learned - Overview)

ATF-II Review Schedule

- We expect progress at ATF during the coming months (until summer 2013), but it is important to do this review to complete the GDE beam test facility work, so it may be better to hold the review before summer 2013.
- Of course, the precise days can be adjusted to fit the ATF-II schedule.

ATF-II and the EU / AM HEP Planning

- EU 'Strategy' Process is now underway
  - Completed Spring 2013
- US 'Community Summer Study' is starting
  - DoE Advisory 'P5' will report mid-2014

- ATF-II is very important and very visible to both Planning efforts

Positive recommendation from both is very important for a Japanese ILC initiative