ATF/ATF2

- **3-4 April 2013 at KEK**
  - https://ilcagenda.linearcollider.org/conferenceOtherViews.py?view=standard&confId=5973
  - All presentations posted
- **Very well attended (including international collaborators)**
- **Review committee:**
  - Barry Barish
  - Alex Chao
  - Olivier Napoly
  - Katsunobu Oide
  - Marc Ross
  - Andre Seryi
  - Rogelio Tomas Garcia
  - Nick Walker (chair)
  - Akira Yamamoto

Review Goals

1. evaluate and comment on **progress made** toward **achieving the stated (ILC) goals**
   - 37 nm vertical beam size at the IP
   - Stabilising the beam

2. assess the **current readiness** of the ATF/ATF2 complex toward achieving the goals, including, for example, **understanding of beam dynamics** and expected **instrumentation performance**

3. comment on **lessons-learned** at the ATF/ATF2 for the **ILC complex** and how these may be included in the ILC design

4. discuss **future plans** and **set milestones** for the short and medium term towards achieving the ILC goals.

Themed Sessions

- **Wednesday 3.04**
  - Damping Ring Performance
  - (ATF2) Accelerator Physics Issues
  - ATF2 Beam optics design and performance
  - Achieving the stability goal

- **Thursday 4.04**
  - Instrumentation & Diagnostics
  - Collaboration issues

19 separate presentations

Close Out

- **Congratulations to the team for**
  - An excellent and successful programme
  - A well-prepared and comprehensive review!
- **Primary (2) goals have expanded to include a “third” goal**
  - Quantification and control of beamline impedance
  - (also know as wakefields)
- **We believe goal 1 and impedance issues should be separated (next slide)**

Goal 1: 37 nm

- **Achieved 64 nm at low bunch charge**
  - Already clear demonstration of optics and aberration control
  - Should make this very clear (quantify)
  - Optics control and tuning algorithms work!

- **Last "100m" will be challenging**
  - 64→37 nm
  - Kicker and EXT (optics) issues etc.
  - programmes already in place
  - understanding diagnostics (IP BSM systematics)

- **Caveat: understand impact of reduced beta_x* to vertical beam aberrations. Should be a goal to implement.**

- **Going to high currents does not seem to offer any benefit in *understanding optics issues***

- ***Understanding emittance preservation at higher bunch charge is a new goal***
  - *But equally important for LC*

Goal 2

- **Goal II assumes:**
  - "wakefield" problem is solved to enable 1-2e10 e/bunch
    - IPBPM resolution at 7e9/bunch is 3.7nm
  - IP Jitter below 30%. So far upper boundary is given by beam size
    - During March run: 10nm < IPjitter < sqrt(65^2-48^2)=44nm

- **Instrumentation concerns:**
  - IPBPM resolution in large divergence location?
  - IPBPM calibration:
    - long process
    - Piezo read-out resolution=20nm
    - temperature effects in full set-up

Collaboration & Future Programmes

- Important to unify further the groups involved in Goal 2
- Low beta* an extrapolation of goal 1 (good)
- Consider SC FD test back on the table.
- Budget situation for 2013 is critical

Next Steps

- **NJW (chair) to draft a short report**
  - very short and comprehensive
- **Iterate with committee**
- **Final ‘draft’ to Barish/EC end of April**
  - And to ATF/ATF2 collaboration