Preparing for AAP: TTF/FLASH 9mA Experiment

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What I believe I'm supposed to cover

- The presentation addresses the topic of 'Cryomodule String Test' (formerly S2)

- 9mA program goals, accomplishments, schedule, etc
  - **Short-term: demonstrate 9mA long pulses, high gradient**
  - **Longer-term (post FLASH upgrade)**
- Address how the 9mA program overlaps with TDP-2 goals outlined in the R&D Plan v3
  - **What could be addressed at FLASH in the TDP-2 timeframe (and what could not)**
  - **Capabilities and limitations of FLASH in the context of meeting the TDP-2 goals**

R&D Plan v3 context

Under Section 3.1.4: Cryomodule-string test

- *In the second stage, an extended linac test system containing multiple cryomodules and powered by a single klystron and RF power distribution system will be demonstrated. This is referred to as the 'cryomodule-string test'.*

- *The test will include beam acceleration and beam handling. This has been scheduled for the end of TD Phase 2 (2012).*

R&D Plan v3 with respect to FLASH

- *The highest priority goal* [for TDP-2]
  - ***to demonstrate beam phase and energy stability at nominal current, (including a test of beam based feedbacks)***
- *Secondary goals, which are important because of their potential impact on the cost of the ILC, are to:*
  - ***demonstrate operation of a nominal section or RF-unit***
  - ***determine the required power overhead under practical operating conditions***
  - ***to measure dark current and x-ray emission***
  - ***and to check for heating from higher order modes in order to determine the dynamic cryogenic heat load with full beam current operation.***

R&D Plan v3 … cont

- *Finally, there are a series of studies that are needed to understand main linac subsystem performance. These include:*
  - ***developing RF fault recognition and recovery procedures***
  - ***evaluating cavity quench rates and coupler breakdowns***
  - ***testing component reliability, performing long term testing of cryomodules, (including thermal cycling)***
  - ***assembling an actual tunnel mock up to explore installation, maintenance, and repair issues.***

Comments on the goals for the talk

- Some aspects are relatively straight forward, eg describing the 9mA program
- Some aspects are more difficult to address and will need discussion with PMs and DESY
- There is overlap with other SCRF topics and with complementary string-test programs at Fermilab and KEK.

Documents to post

- There is a myriad of documentation we could post, eg
  - **Technical description of FLASH**
  - **Initial proposal for the 9mA studies, presentations to FLASH Beam Allocation Committee, etc**
  - **Mini workshop in January, plans for Sept 09 studies**
  - **Studies reports, results, analyses,…**
  - **FLASH seminar talk from Dec 08**
  - **Report on the beam dump repair**
  - **FLASH upgrade plans, schedule, XFEL schedule**

- More thought is needed on the content of the presentation before we can reduce the list to something manageable.