

## Summary of the s4 meeting preparation

First, we would like to follow the similar style of closed session at previous project meetings, i.e. brief status report on budget, timeline etc.

So, presentations ( 5 minutes in each) are suggested as follows;

KEK, Junji Urakawa (KEK)

IHEP, Jie Gao ( IHEP, China)

KNU, En-san Kim (KNU, Korea) who cannot participate.

USA, Andrei Seryi (SLAC), Marc Ross (FNAL)

EuroTeV and DESY, Eckhard Elsen (DESY)

UK, G. Blair, S.Boogerd (RHUL), P.Burrows, D.Urner (Oxford univ.)

France/CERN, P. Bambade (LAL), A.Jeremie(LALL), F.Zimmermann(CERN)

Based on discussion at this meeting, some critical questions are listed below;

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### 1. ATF beam ( ILC like bunch structure )

(1) Present : 1 to 3 bunches can be extracted beam at 1.5Hz

, where 2 and 3 bunches for 300 and 150ns separation, respectively

(2) When will 20 to 60 bunches be available ?

- fast kicker R&D, demonstration of extraction in 2008 ?

, where two 3cm long stripline-kickers and a new short septum will replace the present pulsed-kicker (K1),

### 2. Responsibility of hardwares

(1) S-band cavity BPMs, 4 sets, who is responsible, RHUL or KNU ?

(2) Honda monitor ( sub-micron patterned target);

who is responsible, KEK, LAL ?

### 3. Working group formation ;

on "studies of abnormal emittance growth at ATF extraction line"

coordination by S.Kuroda (KEK), F.Zimmermann (CERN), ??? (SLAC)

Should this issue be resolved/understood before the commissioning ?

### 4. Schedule

(1) Is the commissioning in October 2008 ?

- minimum configuration will be supported to transport beam through beam dump by KEK at least

- need to strong endorsement for the full completion from the GDE, S4 task force
- (2) When will we expect to achieve nano meter beam size ?
  - by end of 2008 for alignment (initial and BBA) in Oct.2008 through Mar.2009 and beam tuning in April through December 2009 ?
  - all the hardware and software are ready ?
- (3) When will we expect to achieve nano meter stabilization at IP ?
  - when is the feedforward, FONT and Monalisa systems ready ?

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There are additional questions which may be asked from the task force members.

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- (1) What are intermediate goals to achieve the mode-1 of nanometer beam size?
- (2) What are intermediate goals to achieve the mode-2 of nanometer stabilization at IP ?
- (3) What are challenges specific to ATF2?
- (4) What ILC project is getting for the investment ? Like what design risks are reduced ?

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Our first thoughts are listed below;

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(1) Intermediate goals

MODE-1 : nanometer beam size

understanding the vertical emittance growth at extraction line

- but 1.5 times larger vertical emittance with no improvement

initial alignment and GM measurement on the new floor

beam transport to the beam dump

BBA establishment

commissioning of Shintake monitor with detector

- verification by background simulation

in principle, small beam size can be achieved with wire scanners

( no LW is necessary at present optics design )

MODE-2 : nanometer stability at IP

commissioning of feedforward system

- vertical jitter from 30% to 5% of beam size

commissioning of FONT system with IPBPM system

- 3 bunches with 150nsec separation

extraction with the stripline kickers - optimization of optics

- < 60 bunches with 300nsec separation with fast stripline kickers

commissioning of Monalisa system

- monitoring alignment and stability between FD and BSM at nanometer level

(3) challenges specific to ATF2

e.g. what we would do if beam size measurements would take long time ?

too large background study - installation of collimators

or serious background studies

IPBPM with 2nm resolution for intra-pulse feedback (FONT)

now under beam tests to be verified in 2007-2008

(4) what ILC project is getting for the investment. Like what design risks are reduced ?

prototype of ILC final focus system

verification of local chromaticity correction scheme for final focus system

instrumentation - LW, FONT, QBPM(100nm resolution)

beam tuning - BBA based on movers, dynamic tuning

identify "unknown but necessary" beam diagnostic tools and components

verification of FD stability - monitoring of alignment at nanometer level