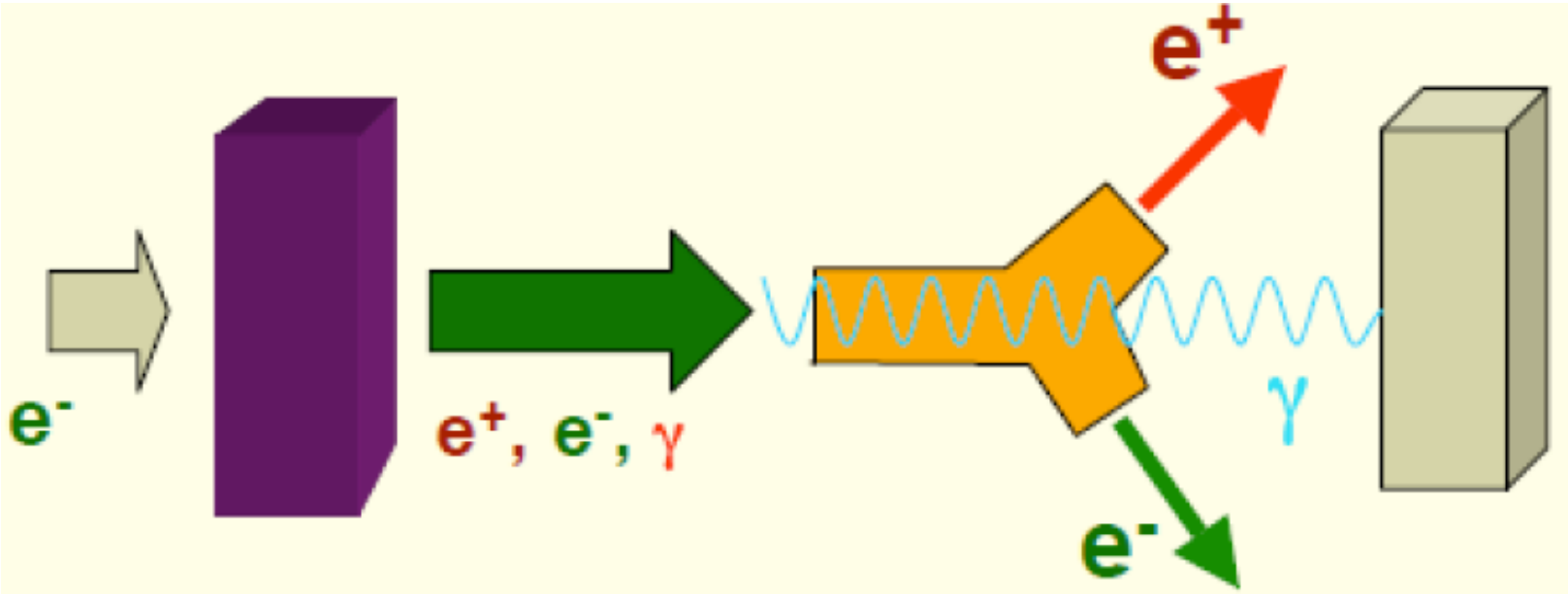
Hybrid Target Test at KEKB Linac



T. Omori (KEK)

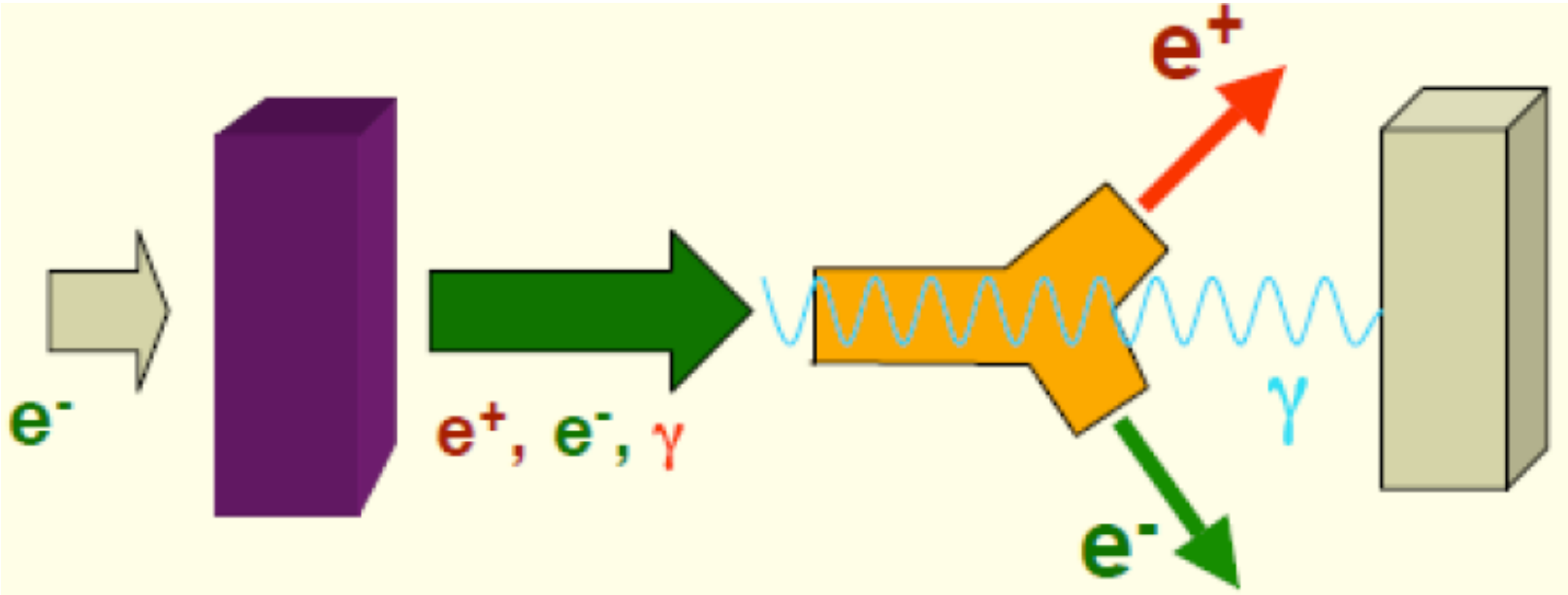
Accelerator Design and Integration Meeting

29-April-2008, DESY

Many thanks to Chehab-san, Logachev-san, Bonder-san, Wanming-san, Wei-san, James-san, Ian-san, Susanna-san, Louis-san, Liu-san, Potylitsyn-san, Urakawa-san, Abhay-san, Kuriki-san, Takahashi-san, Suwada-san, Kamitani-san

Hybrid Target

Chehab-san



"Radiator"
Thin CRYSTAL

"Converter"
Thick AMORPHOUS

Proposal by Chehab et al

E_{beam} = 10 GeV

$t_{crystal}$ = 1 mm

$t_{amorphous}$ = 8 mm

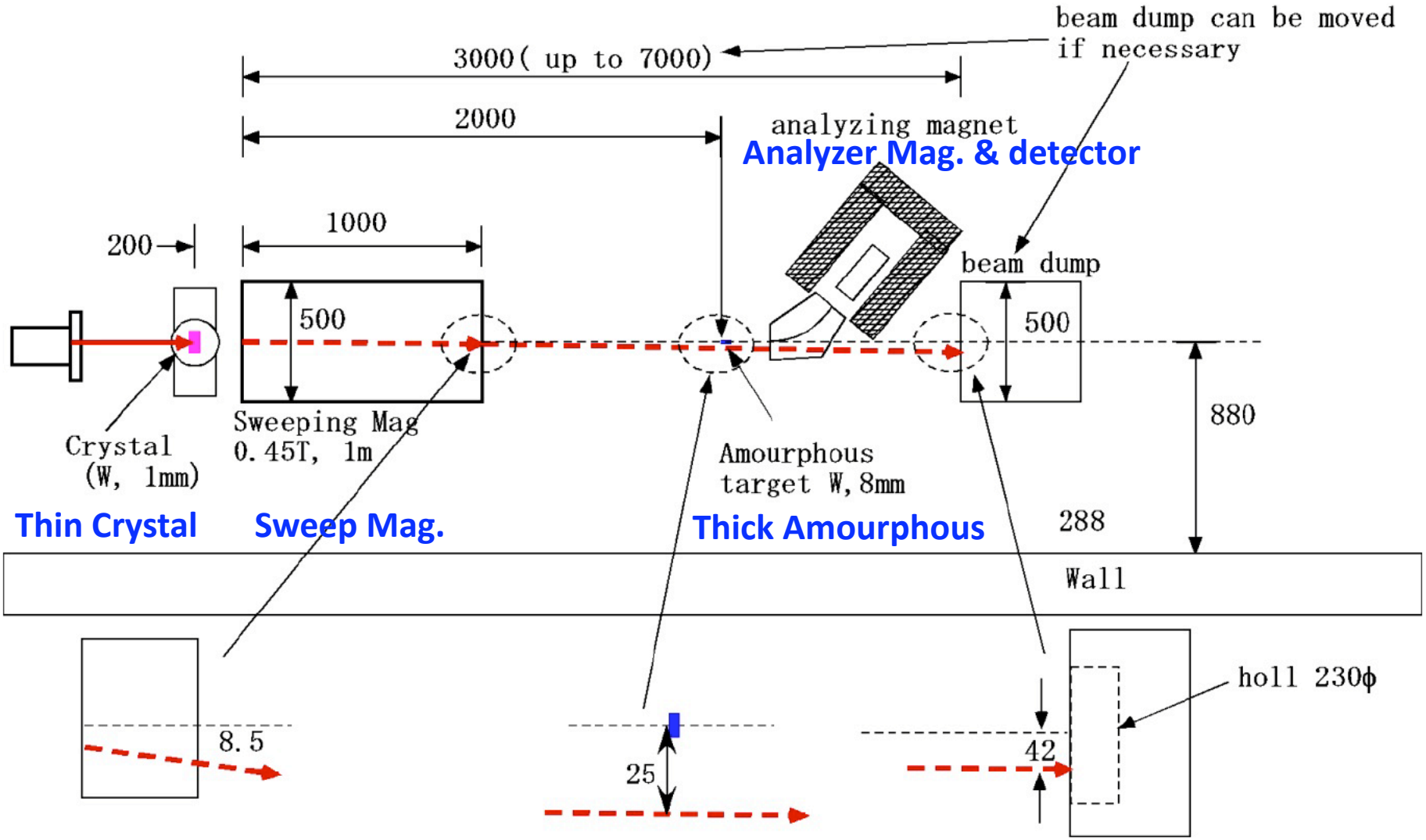
Test at KEKB Linac

E_{beam} = 8 GeV

$t_{crystal}$ = 1 mm

$t_{amorphous}$ = 8 mm

Test Area at the end of KEKB Linac



Expectation 1

Chehab-san

injection	Nγ/Ne-	Ne+/Ne-
on <111> axis	24	13.4
not <111> axis	2.8	2.9

E = 20 – 30 MeV (accept. of detector)

Ne+ : R (on axis/off axis) = 6

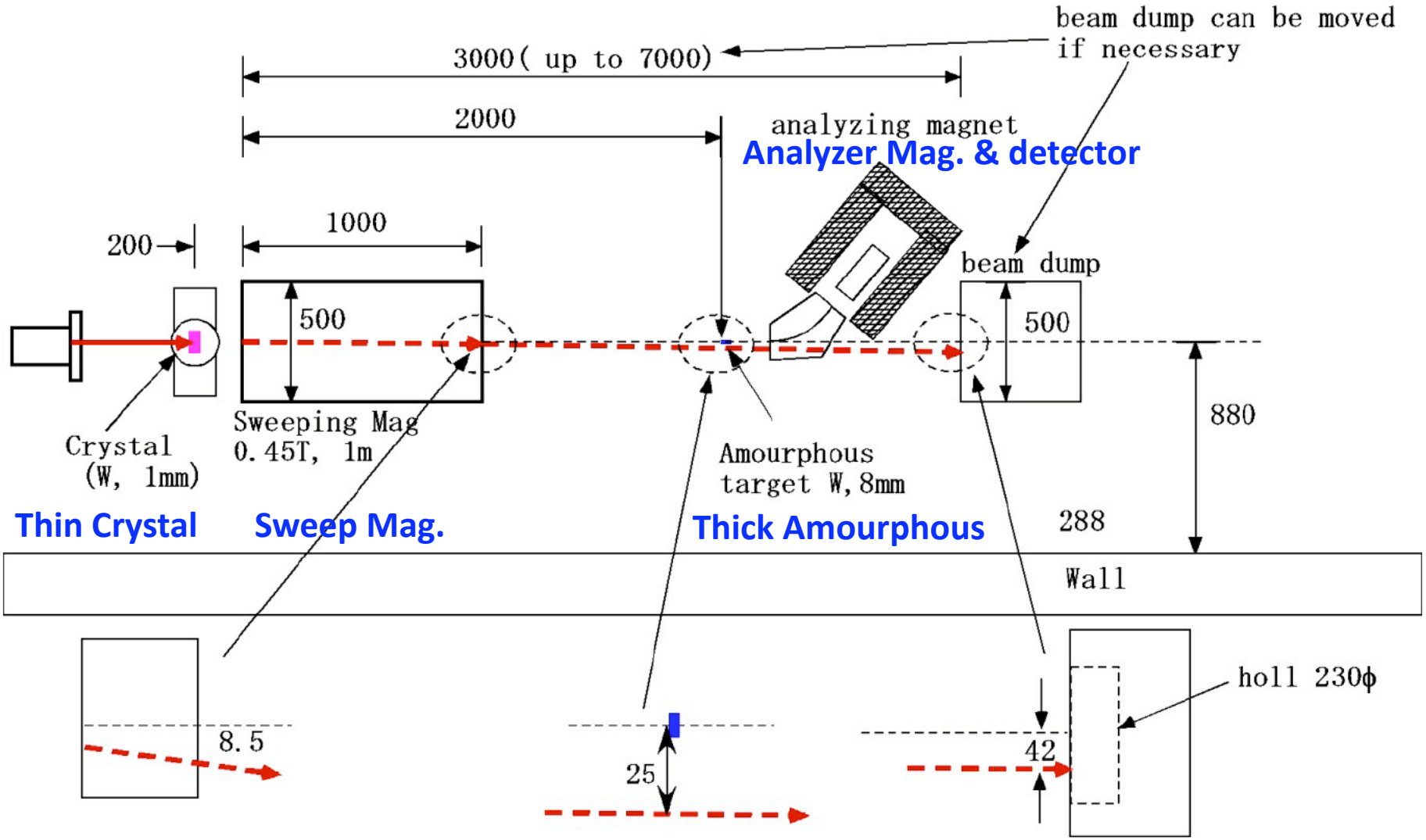
Expectation 2

Chehab-san

	Total Dep. En.(%)	PEDD(Gev/cm3/e-)	PEDD (J/g)[pulse]
Purely amorp.	4.5%	7	200
Purely crystal	2.4%	7.2	204
Hybrid	6%	1.5	42

Hybrid Target reduces PEDD ~ 1/5

Test Area at the end of KEKB Linac



Plan of Experiment (by Mar 2010)

- **Hybrid target**
  - **Measure**
    - **Ne+ (20-30 MeV)**
    - **Temperature (by thermography)**
  - **with 4 conditions**
    - **Sweep Mag : on**
      - **injection : on axis**
      - **injection : off axis**
    - **Sweep Mag : off**
      - **injection : on axis**
      - **injection : off axis**

- **Normal target**
  - **Measure**
    - **Ne+ (20-30 MeV)**
    - **Temperature (by thermography)**

Schedule

- **Jul.-Aug. 2009**
  Install apparatus
  Heavy items (sweep mag.) mus be installed this period
- **Sep. 2009**
  Beam Test 1 (Ne+ measurement)
- **Jan. 2010**
  Beam Test 2 (Temp. measurement)

Status of Preparation

- **Sweep Mag. --> We will use a spare of ATF DR mag.**
- **Detector and analyzer mag. --> Exist in the experimental area.**
- **Crystal tungsten -- >Will be delivered from Tomsk by the end of July**
- **Thermography --> Need consideration**