

***Brief Summary of
2nd DR/BDS/DUMP subgroup meeting***

2020/10/20

IDT WG2 meeting

Toshiyuki OKUGI, KEK

2nd Meeting of DR/BDS/DUMP subgroup

Tuesday 13 Oct 2020, 22:00 → 23:00 Asia/Tokyo

22:00 → 22:20 **Technical preparations for ILC DUMP**

🕒 20m

Speaker: Nobuhiro Terunuma (KEK)

 IDT-WG2-Dump-202...

22:20 → 22:40 **Discussion of next meeting and later**

🕒 20m

Speaker: Toshiyuki Okugi (KEK)

 IDTWG2_okugi_202...

Announcement

The following 2 persons joined to IDT-WG2 and DR/BDS/DUMP subgroup.

Karsten Buesser (DESY)

Glen White (SLAC)

The following 4 persons were invited to today's subgroup meeting in order to discuss the technical preparation for beam dump.

Marco Calviani (CERN)

Simone Gilardoni (CERN)

Ibon Bustinduy (ESS- Bilbao)

Fernando Sordo (ESS-Bilbao)

Technical Preparation for Beam Dump

presented by N. Terunuma

Dump	Max. Power	Num	Examples (design)	
Tune-up	60 kW	9	LCLS-II (120kW)	If rastering → 250kW
Tune-up ML	400 kW	2	XFEL (300kW)	
Undulator photon	300 kW	1	-none-	Conceptual designs (graphite at 2km, water)
Main dump	17 MW (1TeV)	2	SLAC (2.2MW), JLAB (1MW)	Water dump; 0.75, 0.9MW operated
Undulator 5+5Hz	8 MW	1	Same as main dump	Same as main dump

■ 17 MW main dump and 8 MW(5+5 Hz) dump

- Basic design as **water dump** has been established. (TDR) 14MW+20%margin
- need technical design for **window and its remote exchange, activated water circulation system, radiation safety and CFS.**

Technical preparation (remaining topics) at Pre-lab

- Specific designs what we need to proceed
 - **300 kW photon dump**
 - **17 MW main dump**
 - Water flow system (include vortex flow in dump vessel)
 - Window sealing and remote exchange (30cm in diam., 10 atm activated water)
 - Countermeasure for failure; e.g., window, water system,...
 - **Civil and utility design under the condition of candidate site**
- Robustness test of window for 17 MW main dump
 - Prototyping of window and its attachment
 - Beam test of window material if possible

International sharing candidates of Pre-lab activities

- **Possible collaboration on the engineering design of dump system**
 - SLAC, JLAB ... experience of the 1MW water dump
 - CERN, DESY ... High power dumps
 - Spain ... ESS Target (5MW), IFMIF dump (1MW)
- **Study of the window material**
 - Industry/supplier
 - possibly with RaDIATE collaboration for the high-power targets

- *There was a question about the possibility of a gas dump.*
- *There was a question about how much beam power was needed to test the beam window.*
- *The beam dump design should be completed at least in the first year of the preparatory phase in order to respond to the government etc..*
- *KEK beam dump group have been investigated the dump design by communicating with CERN and others as needed from time to time. They will continue to form a framework for international cooperation by adding institutions that are interested.*

Next meeting

- The next subgroup meeting will be held on
Data: 2020/10/27 TUE
 - ✓ 22:00 Japan (23:00 from November)
 - ✓ **14:00 Europe (only 10/27, 15:00 from November)**
 - ✓ 06:00 San Francisco
 - ✓ 08:00 Chicago
- Connection : CERN Vidyo <https://vidyoportal.cern.ch/join/iA6ppK4CYW>
(no password)

Discussion items

Fast Ion Instability (Feedback) / Electron Cloud Instability in ILC damping ring

- I will give a technical preparation plan for the issues.
- The plan was considered by communicating with *M. Tobiayama*, *K. Shibata* and *K. Ohmi* by their SuperKEKB experiences.

Anti-solenoid and Anti-DID

- Karsten will give us his opinion on anti-solenoid and anti-DID.
- Brett Parker will join the subgroup meeting.
Brett Parker willing to join to IDT WG2.

Discussion items in later subgroup meeting

Fast kickers / Injection kicker for e-driven positron source (11/10 ?)

⇒ I would like to invite the following persons for the discussion, if possible.

- ✓ Angeles Faus Golfe (LAL)
- ✓ Mike Barnes, Wolfgang Bartmann (CERN)
- ✓ Fernando Toral (CIEMAT)
- ✓ Seadat Varnasseri (ESS- Bilbao)

Permanent magnet (11/10 or 11/24 ?)

⇒ I would like to invite the following persons for the discussion, if possible.

- ✓ Steven Brooks (BNL)
- ✓ Juan Luis Muñoz (ESS- Bilbao)
- ✓ Jim Clarke (STFC)

Final doublet (11/24 ?)

⇒ I would like to invite the following persons for the discussion, if possible.

- ✓ **Brett Parker (BNL).**
- ✓ Juan Luis Muñoz (ESS- Bilbao)

Crab cavity (12/9 or 12/10 ?)

⇒ I would like to invite the following persons for the discussion, if possible.

- ✓ **Yasuchika Yamamoto (KEK)**
- ✓ Rama Calaga (CERN).
- ✓ Juan Luis Muñoz (ESS- Bilbao)

Long-term stability test of IP beam size and position at ATF

⇒ The discussion at the **ATF international collaboration** will be reported.