Activity for SuperKEB Optics

SuperKEKB MAC
2021/09/02

Akio Morita
(SuperKEKB Optics Group / skb-itf-opt contact person)

Optics Activity under ITF

- SuperKEKB SAD to MADX conversion
  - Rogelio Tomas et.al
  - 1st meeting was hosted by CERN side.
  - This includes converting FCC-ee SAD lattice into MADX.
- SuperKEKB beam dynamic study on LEGO
  - Yunhai Cai
  - Porting LER lattice into LEGO & Comparing basic optical property with SAD.
- Talk about off phase sextupole study in SuperB
  - Pantaleo Raimondi
  - Confirming to Pantaleo for setting meeting. (Koiso-san & Masuzawa-san)

- Investigation for operating on different ν_s
  - Asked from beam-beam sub-group

Activity in SKB Optics Group(1)

- Study ``how to implement perfect matched beamline''
  - Hiroshi Sugimoto
  - Waiting design proposal updates

- Rebuild LER lattice using updated IR Model
  - Hiroshi Sugimoto
  - Making β*y = 1mm base lattice

Activity in SKB Optics Group(2)

- Study ``how to rotate sextuple during collision operation''
  - Akio Morita
  - Investigating the required extra conponets for keeping orbit & linear optics during sextupole rotation.
    - Estimating extra hardware installation for keeping collision optics during sextupole rotation (waiting hardware feasibility check & cost estimation of extra hardware)
    - Both sextupole rotating system control software and magnet control software upgrade WOULD be required.
    - Extra hardware installation depends with the required operation level.

- SAD development to improve long container generation for processing long trend data (analysis & graph rendering)
  - Akio Morita
  - Development items
    - Variable temporary container on system heap (implemented)
    - Rewriting container generators (ongoing / needs code cleanup before rewriting)
    - Stackless expression evaluator (planing / needs current code investigation)

Activity in SKB Optics Group(3)

- Study of semi-perfect matched lattice
  - Haruyo Koiso
  - Sample lattice was built, waiting simulation result from Oide-san
- Study of D2V1 collimator phase matching
  - Haruyo Koiso

Activity in SKB Optics Group(4)

- Alasysis of IPTilt knob history during collision
  - Yukiyoshi Ohnihi

- Investigation of nonlinear collimator optics
  - Kentaro Harada

Summary

- Many tasks are preparing / ongoing. (*My list MIGHT BE incompele*)
- It is difficult to follow up the individual task activity, because...
  - Activity is not reported to well known & common public space.
    - skb-itf-opt mailing list was launched, however...
      - Its ML archive is not accessible from outside of KEK network.
      - Some participant redirects the discussion thread on ML to the direct mail passing.
        - The following discussion is invisible from other participant and is not archived in ML archive.
    - skb-itf-* does not provide the issuse tracker system for visualizing / sharing progress of individual task activity.
  - The information on the collabolation IT tools (document service, issue tracker, web site…) is incomplete and does not have well formed index page for referencing.
    - The up-to date mailing list participant list is now available:
      - https://www-linac.kek.jp/linac-com/skb-itf/ml/
  - **The information sharing condition is not changed before SuperKEKB ITF.**

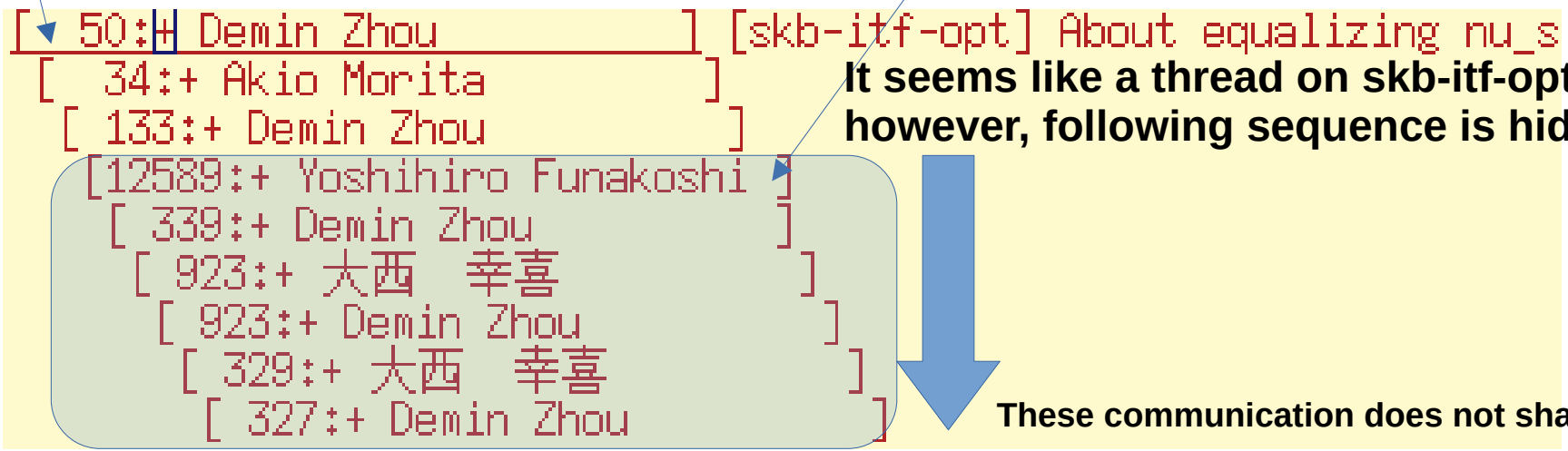
ML Thread Redirection

Thread started on skb-itf-opt ML by Demin-san.

```
From: Demin Zhou <dmzhou@post.kek.jp>
Subject: [skb-itf-opt] About equalizing nu_s
To: skb-itf-opt@ml.post.kek.jp
Date: Sun, 29 Aug 2021 17:36:00 +0900 (3 days, 21 hours, 43 minutes ago)
Attachment: [2. text/plain]...

Dear all,

In the previous itf-bb, there was one question raised:
Why is it not possible to have the same nu_s for the two rings?
```

```
From: Yoshihiro Funakoshi <yoshihiro.funakoshi@kek.jp>
Subject: Re: [skb-itf-opt] About equalizing nu_s
To: Demin Zhou <dmzhou@post.kek.jp>
Cc: 船越義裕 <yoshihiro.funakoshi@kek.jp>,
 Akio Morita <akio.morita@kek.jp>,
 Yukiyoshi OHNISHI <yukiyoshi.onishi@kek.jp>,
 Haruyo Koiso <haruyo.koiso@kek.jp>
Date: Wed, 1 Sep 2021 17:19:17 +0900 (22 hours, 3 minutes, 50 seconds ago)
Attachment:
 [2. application/vnd.openxmlformats-officedocument.presentationml.presentation; EqualizingNus2021_09_01.pptx]...

Dear Zhou-san,

Another way of changing nu_s is to change RF voltage (w/o changing momentum compaction).
In the attached slides, I will show some quick considerations. I will welcome your comments.
```

Thread flow redirects to direct mail.



It seems like a thread on skb-itf-opt ML, however, following sequence is hidden from ML.

These communication does not share with skb-itf-bb.