MDI-BDS/Physics – Meeting calendar and topics

- 17/9/21 – Layout of MDI region
- 30/9/21 – Software for and precision of/for background studies
- 14/10/21 – L*
- 26/10/21 - Intermediate report at ILCX
- 25/11/21 – Beam calorimeters
- 09/12/21 – Beam pipe and vertex detectors
- 06/01/22 - Polarimetry and beam energy measurements
- 13/01/22 – Beam dump and detector magnets
- 27/01/22 – Detector alignment after push pull
- 10/2/22 – Summary session
- 11/02/22 – 15/04/22
  - Writing of (short) summary document
  - Definition of real working groups and work program for Pre-lab
  - Including discussion of future of activities

- ~40 people on mailing list
- Average attendance of meetings: 15 people

From Meeting series to Summary/Workplan

- Workplan based on meeting series until Spring 2022 (I wish we would be late)

- Summary document
  - https://www.overleaf.com/1791765841bkdgkpjdxndv
  - Conclusion at meeting on 18/11/21: Should be mixture of summary and workpackage definition

- The goal is to have a document that is publically avalaible that summarise the status and could serve as a first input to motivate funding requests for MDI related work
  - .. and to allow us to react quickly if miracles happen
  - May also be input to ECFA Higgs study (and Snowmass even if late)

- Document should be ready around 15th of April (is there a need to have it earlier?)
  - First draft by 15th of March

Document and Workpackage structure – A first attempt

- Introduction (Main editor R.P., second editor Karsten)
- WP1: Layout of MDI regions (Main Editor Claude, second editor Yasuhiro, expert proof-reader ?)
  - The Police! Defines envelopes and documentation standards, checks for conflicts
  - Should include beam pipe and vertex detectors
  - Detector magnets
- WP2: IP Collision feedback and collimation system (Main editor Karsten, second editor Tom, expert proof reader Phil?)
  - Studies functionalities of feedback systems
  - Interaction feedback system <-> sub-detectors (e.g. RF noise in vertex detectors)
  - hardware and software tools
  - Forward calorimeters including GAMCAL
  - Vibration control (QD0)
- WP3 Software and precision of background studies (Main editor R.P., second editor Jenny, expert proof reader Daniel?)
  - Revision of tools + training
  - Background sources
  - Theoretical input to e.g. beam background studies
  - Interface to full detector simulation
- WP4: Beam polarisation, polarimetry, energy measurements (Main editor Jenny, second editor R.P., expert proof reader ?)
  - Polarisation, effects on beam energy uncertainty, transport to interaction region
  - Polarimeters
  - Energy measurements, shikane and in-situ
- WP5: Push-pull Main editor Tom, second editor Yasuhiro, expert proof reader Armin Reichold?)
  - Technologies (overlap with CFS)
  - Alignment
- Conclusions (Main editor R.P., second editor Claude)

Document and Workpackage structure – Comments

- Will form a team of two/three people for each Section ~ Workpackage
  - The expert proof reader can be taken into the loop at any time
  - The group of three should interact with the “community”

- I think that the text should not strictly summarise the talks but rather point out where work is needed
  - This is of cours a wide field ranging from “everything needs to be revised” to concrete topics
  - The more concrete topics we can formulate the better

- Identify topics where technological developments lead to paradigm changes
  - Example: Modern vertex detectors may allow for more beam background and thus a smaller beam pipe

- How could the work become attractive for new generation of physicists, e.g. Machine learning for feedback system and alignment?
  - How can we keep the few ECR that have presented?

- Identify topics which were not covered at all (Beam energy measurements, FLUKA)

- We may distinguish between ongoing work, i.e. Work that will happen independently whether there is a pre-lab or not (and where ILC related studies could sail in the wake field) and work for which the existence of a pre-lab and funding is mandatory since otherwise work is entirely stalled
  - Examples for ongoing work are (non exhaustive)
    - QD0 (though not really in WG3 but need to be integrated into detectors)
    - ATF3 studies
    - Forward calos and eventually beam background studies at e.g. LUXE
    - Polarimetry for Belle II (some synergies also with LUXE [Lasers])
    - Development of vertex detectors for e.g. ALICE and Belle II
    - Guinea Pig
  - Examples for entirely stalled work are (also non exhaustive)
    - Push pull and Alignment
    - CAIN
    - “Online” beam energy measurements with shikane
    - Downstream polarimeter
    - GAMCAL

- How to incorporate the “lessons learned” session at ILCX

Document and Workpackage structure – Comments

- We are not in a position in which we can formulate a workplan with milestones and deliverables (nothing is resource loaded)
- The workplan should describe and motivate actions items that should at the end of each section be summarised in a table that may look like that

Topic	Status	Interested Groups	Comment
Functional requirements of IR System, adaptation to 250 GeV	Ongoing	Oxford, IJCLab	ATF3 studies
LumiCal	Ongoing	TAU, ...	LUXE
Alignment	Stalled	Oxford, SLAC, IJCLab	Requires dedicated Funding, project

- Where possible critical issues should be identified that may require basic and early decisions
  - Examples are downstream polarimeters, two interaction regions and larger L* (latter two highly unlikely but [still] on the table)
  - Common QD0 (despite of technical difficulties as seen in talk of Toshiaki)
- Should we also try to establish an overview of the resources needed, maybe as an internal addendum?
  - We may ask experts how many people were active, during the best phase of the activity, and what was the approximate funding during that phase
  - We may ask for a rough estimate how much more (or less) w.r.t. best phase would be needed during the pre-lab

How to keep the ball rolling?

- Should continue to have regular meeting in the frame of this core group during the drafting phase
  - One meeting may be dedicated to check for input to Snowmass White Paper
- Watch out for relevant meetings, papers and talks
  - .... and keep us mutually informed (e.g. Crab cavity and BDS Meeting next week)
- How about continuing meetings “with community”?
  - At least one more when the document draft is in a “mature” state
  - This depends also how the IDT will evolve
- How to make our voice heard to higher level bodies like IDT Management?
  - ... a pirori MDI work is integral part of Pre-lab

Backup