
5th Beta-beam Task Meeting

Introduction - Status

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Where do we stand

- **Month 26 in the 4-year Design study (slightly over half-time).**
- **EURISOL Mid-Term review with EU 24th April 2007 Orsay.**
 - Brief overview presentation on Beta-beams (AF).
 - Positive remarks on EURISOL in general and also on Beta-beam progress.
- **Milestones in the last reference period (all due in month 18)**
 - First order optics design RCS (optics, injection studies, etc.)
 - Identification of limitations in PS and SPS (space charge, vacuum, losses)
 - First order optics design Decay Ring (lattice, injection, collimation section, etc.)
- **All milestones reached (already at 4th Task meeting).**
 - Everything OK as far as formalities are concerned...
 - Nevertheless there are several more or less critical issues:

Critical Issues (outside beta-beam task)

- **Production chain (target-ion source-bunching):**
 - Evident ^{18}Ne shortfall (more than one order of magnitude)
 - Unclear situation with ^6He situation
 - “Bypassed” in DS with “top-down” approach in intensities.
 - New proposal for production ring (C. Rubbia).
 - Presentation by P. Delahaye on production chain in EURISOL
- **Unclear situation for beta-beam post-accelerator linac**
 - EURISOL requirements differ strongly from our requirements
 - DC with low current vs 10 Hz with high peak current
 - A/q of ions to be accelerated, top energy, etc.
 - Time sharing of linac?
 - Proposal to build dedicated and optimized beta-beam linac (who, when, where...)
 - Presentation by A. Bechtold (Univ. Frankfurt)

Critical Issues (inside beta-beam task)

- **Collimation and absorbers in the Decay Ring**
 - Very high power / energy deposition
 - Protection of SC dipoles
 - Activities launched (CEA, CERN-AB/AT, TRIUMF)
- **Decay Ring RF system**
 - Beam loading, very high peak current due to duty factor
 - Still pending, after first analysis very delicate → high priority
- **Beam losses in PS**
 - Detailed simulation study, absorbers in open-C magnets?
 - Presentation by M. Kirk
- **Integration of beta-beam with CERN upgrades**
 - PS2 study , recently comparison SPL vs. RCS as PS2 injector, SPS 40 MHz for proton upgrade
 - Presentations by M. Benedikt, S. Hancock

Next steps (coming 6 - 12 months)

- **Produce coherent picture along machines (in parallel to above)**
 - RF programs for all machines
 - Tracking studies for all machines (collaboration with TRIUMF)
 - Parameter list with explanations, etc...
 - Integration with CERN upgrade studies
- **Define requirements of technical systems on all machines**
- **Look into feasibility and basic design of critical systems**
 - Decay ring RF, Collimation, Magnets, SPS 40 MHz, etc...
- **Basic specifications of all larger systems as basis for cost estimate**
- **Verify status of documentation of conceptual work first 2 years**
 - EURISOL note, conference papers, etc.
 - Preparation for three deliverables (milestones) and final report.

Time schedule

- **22 months left until end of the study (4 years)**
- **We promised a “Conceptual design report” with cost estimate and feasibility of critical technical systems**
- **14 months until next milestones (due in month 39)**
 - **Final design low energy ring(s)**
 - **Study of ion acceleration in PS and SPS and possible upgrade**
 - **Decay ring design**
 - **Next 12 months from previous slide**
 - **7-18 for technical design and cost estimates**
 - **18-22 for coherency in overall design, final report & reserve.**