Tracking for Collimation Workshop
at the 5th Joint HiLumi LHC-LARP Annual Meeting
October 26th-30th, 2015
CERN, Geneva, CH

Tracking for Collimation Workshop
Introduction and practical info

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The HiLumi LHC Design Study is included in the High Luminosity LHC project and is partly funded by the European Commission within the Framework Programme 7 Capacities Specific Programme, Grant Agreement 284404.

Scope of the workshop

Beam collimation and machine protection have become essential aspects for modern high stored energy accelerators. The understanding of operating facilities and the performance extrapolations for future machines demands unprecedented accuracy in simulations of beam cleaning systems. This is critical for the Large Hadron Collider (LHC) and for its High-Luminosity (HL) upgrade project and for the Future Circular Collider (FCC) presently under study, but also for a number of other lower energy accelerators that operate with high hadron beam intensities. These simulations require **precise tracking** of halo particles with **large betatron amplitudes** and **off-momentum errors** as well as **precise modelling for the scattering** with collimator materials and **aperture checks**. Several tools have been developed by different teams, putting together the required competence to improve simulation accuracy on all fronts. **High-efficient cleaning simulations** require in addition **very demanding CPU power**, as high statistics is required for loss predictions at the 1e-5 level and below. In recent years, important progress was made in the context of FP7 programmes on LHC collimation studies.

This workshop aims at gathering together key developers and international experts to address:

- **Status and prospect of different codes being developed for collimation studies**
- **Coupling of different tools**
- **Recent advanced implementations (halo models, hollow e-lenses, crystals, dynamics simulations)**
- **Status of simulations for heavy ion beams**
- **Results of recent benchmark of simulations against beam data from operating machines**

Program - I

Session 1 - Overview of available tools and recent developments {S. Redaelli}

- S. Redaelli: Introduction [10 min]
- R. Bruce: Status of Sixtrack [25 min]
- V. Vlachoudis: Status of Fluka coupling to SixTrack [25 min]
- H. Rafique: Status of Merlin and recent developments [25 min]
- L. Nevay: Status of BDSIM [25 min]
- P. Hermes: Simulation tools for ion collimation [25 min]

Session 2 - Advanced implementations and specific applications {A. Rossi}

- D. Mirarchi: Update on crystal simulation for collimation [25 min]
- E. Quaranta: new materials for SixTrack [20 min]
- Kyrre: Dynamic simulations in SixTrack [20 min]
- H. Garcia: Modelling of beam halos [20 min]
- F. Velotti: Injection protection studies [20 min]
- M. Fiascaris: First loss maps and halo population for FCC [20 min]

Program - II

Session 3 - Exploitation and recent benchmark activities {R. Bruce}

- G. Robert-Demolaise: Simulations of collimation losses at RHIC [25 min]
- L. Skordis: Simulation comparisons to BLM data [20 min]
- S. Tygier: Merlin simulations during squeeze at 4 TeV [20 min]
- A. Mereghetti: fluka coupling for SPS scrapers [20 min]
- J. Barranco: Beam loss studies during the CERN PS continuous transfer extraction [20 min]

Logistics

The whole meeting takes place in this room.

No remote connection. Key people involved are here.

Coffee breaks and sandwich lunch offered to all participants

↦ Sponsors: HiLumi and X-Beams (EuCARD²)

Dinner (invitation only) takes place at the Auberge de Satigny starting at 19h00.

Private arrangements for the transport.

↦ Please let me know if you are “left alone” and need a lift!

↦ Sponsors: X-Beams (EuCARD²) and Collimation Project

Proceedings

I think that it would be great to have proceedings to document the impressive amount of work done on various fronts.

I understand that everybody is very busy. But through off-line discussions I understand that there are also people motivate to contribute with a paper.

I received very positive feedback about writing proceeding by several speakers.

I therefore propose to have proceedings, on a relaxed timeline of 4-6 months. Aim for a Yellow Book.

Please send me feedback about that.

Acknowledgements

Cécile Noels, Julia Cachet

Roderik Bruce

Feedback on program: E. Métral (ICFA),
M. Giovannozzi, F. Cerutti, A. Lechner

Sponsors: L. Rossi, F. Zimmermann