**Beam Loss, Protection, Transfer lines LIU-SPS Working Group**

Mandate:

* Provide specification for all SPS upgrade studies and equipment construction or upgrade, concerning beam loss management and associated machine protection;
	+ Review operational limitations/issues with existing systems (dump, scrapers) and coordinate design studies for improvements;
	+ Review existing protection device systems - when needed, study new / upgraded protection systems;
	+ Provide specification for related beam instrumentation system - when needed study new / upgraded systems;
	+ Review the machine protection system needs and required upgrades;
	+ Establish the list of related MD required and coordinate studies.

Confirmed members:

* Malika Meddahi (chair)
* Brennan Goddard (beam transfer and ABT systems)
* Wolfgang Bartmann (SPS beam dumping system)
* Oznur Mete (scraper studies, SPS beam dump studies, scientific secretary)
* Karel Cornelis (Operational limitations and performances)
* Verena Kain (Transfer Lines and LHC injection protection)
* Eliana GianFelice Wendt\* (Transfer Lines and LHC injection protection)
* Elena Shaposhnikova (Longitudinal beam loss studies)
* Helga Timko (Longitudinal beam loss studies)
* Joerg Wenninger (Machine Protection, interlocking)
* Roberto Losito (Beam absorbers, scrapers and collimator design and fabrication, FLUKA)
* Francesco Cerutti (Beam absorbers, scrapers and collimator studies)
* Alessio Mereghetti (Beam scraper studies)
* Yannis Papaphilippou (SPS optics and beam studies)
* Yannes Bartosik (SPS optics and beam studies)
* Lars Jensen (Beam instrumentation)
* Helmut Vincke (RP)
* As required: vacuum, magnets, services, infrastructure, layout, integration, DB, kickers…

\*Unpaid Scientific Associate

Meeting every 2 weeks – on Wednesdays, 10:30 – 12:00 – in alternate with the LIU-SPS coordination meeting, 865-1D17

Reviews already planned:

SPS scraping and LHC injection losses: operational observations, limits, extrapolation to ‘bigger’ beams, possible solutions in SPS and LHC… November 2.

Schedule

* 2011-2012 : review of all systems, propose upgrades or new systems; machine development and beam tests as appropriate; Construction of new scraping system;
* 2013 -> Q1 2014 : LS1:
	+ installation of new scraping system;
	+ installation of any ‘prototype’ equipment to be tested;
* 2014 – 2016 : continue study and fabrication;
* 2017– 2018 – 2019?: LS2 : Installation, commissioning of all upgraded /new equipments.

Topics:

* Beam loss:
	+ Inventory around the ring and mechanisms;
	+ Additional protection needed?
* Beam dump system: TIDVG, TIDH, MKDH, MKDV
	+ Upgrade of beam dump needed? Relocation?
	+ Energy dead zone range: 37 – 100 GeV ; Additional kickers to cover this zone?
	+ Outgassing and conditioning: bake-out, ongoing upgrades, …
	+ MKDV/MKDH impedance considerations (input from ES BDWG)
* Transfer lines and LHC injection protection: TCDI, TCDIM, TDI,TCDD, TCLI, TCLIM, MKI
	+ Assess resistance to new upgraded beam parameters, energy deposition, showers, impact on other equipments, possible relocation, new blocks…
* Extraction protection: TPSG4, TPSG6
* Scrapers: TIDP
	+ New fixed block + magnetic bump
	+ Other collimators?
* Beam Instrumentation:
	+ What else needed for protection? Stable beam position acquisition for all cycles and intensities; BLM specs;
* Machine Protection:
	+ Is the actual MP satisfactory? What else needed?