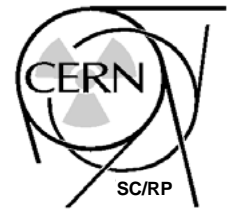
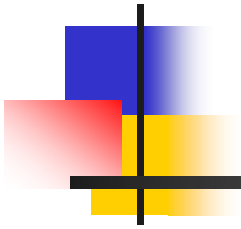
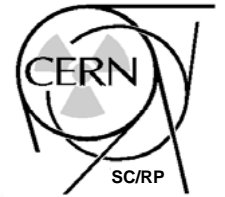


SLHC-PP Work Package 5



Radiation protection and safety issues for accelerator and experiments

WP 5



There are obviously many options for upgrading the accelerators, interaction regions and detectors.

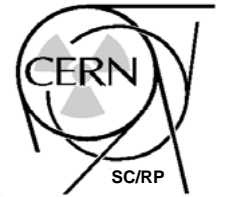
“It will be essential for the design of the SLHC

- to identify all critical radiation protection and safety issues and design constraints
- to find adequate solutions

in the often conflicting requirements of machine and experiment performance and component safety and radiation protection regulation.”



WP 5

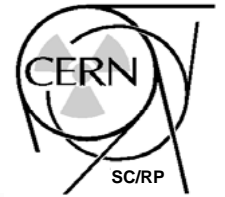


“An optimum should be reached between the performance of accelerators and experiments and the tight regulatory requirements for radiation protection which have to be applied during their **entire lifecycle**, including

- Operation (e.g. dose rate in experimental caverns), maintenance and repair work of SLHC and of the experiments,
- environmental impact
- future dismantling of the facilities,
- the management of future radioactive waste.”



WP 5



“In order to achieve the objectives of WP 5 effective coordination and exchange of information and data, in particular with other work packages within SLHC-PP is required.

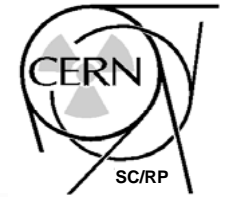
The involvement of all stakeholders from the start will ensure that critical safety aspects concerning radiation protection and environmental issues are taken into account as early as possible.”

“Radiation protection and safety issues for accelerator and experiments”

- **Experiment radiation & activation** (CERN, GSI, USFD, CTU)
 - Simulations for activation and radiation
 - Validation with measurements at LHC
 - Optimization of forward region design, exposure during maintenance and repair
- **Accelerator radiation & activation** (CERN, GSI, PSI)
 - Simulations for activation and radiation in critical regions
 - Evaluation of doses to materials and equipment
 - Minimize consequences for equipment and beam operation
- **Impact study** (CERN, PSI, USFD, CTU)
 - Dose rates in areas of SLHC access
 - Environmental impact
 - Estimates related to radioactive waste

Partners: CERN, CTU, GSI, PSI, USFD

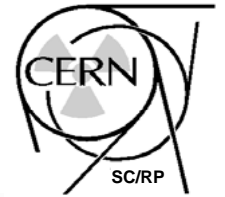
WP 5



Topics for 1st year: (Internal milestones will be established)

- **Compile all existing, relevant information and data for LHC and LHC experiments**
(INB reports, internal documents, radiation task force for ATLAS, ...)
- **Validation of simulation codes**
(calculation and measurements with dosimetric and spectrometric detectors, activation of sample materials; if possible at LHC and detectors)
- **Preparation of joint benchmark measurements at appropriate irradiation facilities**
- **Establish well defined links to other WPs**
(contact persons for machine, ATLAS and CMS have to be nominated)
- **Compile design parameters relevant for the assessment of radiological impact**
(machine upgrade scenarios, triplet design, experiment upgrades)

Specific issues



- **Beam intensity increase: RP issues at existing accelerators, e.g. PS; Time scale for machine upgrade must be taken into account**
- **Experience with LHC will be important input**
- **Environmental impact could be a limiting factor**