

## FCC-ee Radiation and Shielding Working Group

### Scope:

Coordinate the discussion about the radiation impact on the FCC-ee machine, injectors and infrastructure.

Provide a forum, where information about radiation-related matters is shared between equipment groups, accelerator experts and infrastructure experts. Develop a common strategy for assessing and mitigating radiation effects in the collider complex. Provide input for the integration of equipment in the tunnel and for the choice of equipment components, including methods to characterize and qualify them against radiation.

Together with equipment groups and other FCC working groups, establish an inventory of radiation-sensitive equipment and components such as cables, electronics, insulation materials, commercial equipment, polymers, lubricants, etc.

Propose solutions for reducing the radiation impact on the collider and booster and other equipment in the tunnel. In particular, elaborate a suitable radiation shielding and evaluate possible staging options for the different operating modes.

Characterise the radiation levels in the FCC tunnel for the different operation modes (Z-pole to ttbar). Evaluate reference quantities, which assess the risk of radiation-induced equipment failures (lifetime failures) and stochastic effects (Single Event Effects). Together with infrastructure and equipment experts, establish radiation level specifications for equipment in different zones of the tunnel.

Investigate and develop concepts for a distributed radiation level monitoring system (stochastic and cumulative effects).

*Note: radiation protection aspects are under the responsibility of HSE/RP and are outside the scope of this working group.*