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Radiation environment in the FCC-ee arcs

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The intense radiation environment in the FCC-ee tunnel, primarily driven by Synchrotron Radiation (SR) from high-energy electrons and positrons, presents significant challenges for accelerator components and nearby equipment. To mitigate these effects, localized photon stoppers and dedicated shielding have been implemented, reducing annual ionising dose levels in the tunnel to below 10 kGy. For radiation-sensitive electronics that must be installed close to the accelerator, a dedicated shielded bunker is foreseen to further reduce radiation exposure.

This presentation outlines both the baseline shielding design described in the Feasibility Report and an improved conceptual solution, highlighting the resulting radiation levels in the tunnel and within the electronics bunker as obtained from FLUKA simulations. Additionally, particle spectra inside the bunker will be presented to support a deeper understanding of the shielding approach and assess its effectiveness.

Author: HUMANN, Barbara (CERN)

Co-authors: ROMERO FRANCIA, Alvaro (CERN); LECHNER, Anton (CERN); GARION, Cedric (CERN); VALCHKOVA-GEORGIEVA, Fani (Bulgarian Academy of Sciences (BG)); BAUCHE, Jeremie (CERN); VON FREEDEN, Luke (CERN); Dr CALVIANI, Marco (CERN); MORRONE, Marco (CERN); ADY, Marton (CERN)

Presenter: HUMANN, Barbara (CERN)

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