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Photodesorption Studies on FCC-hh Beam Screen Prototypes at KARA

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In the framework of the EuroCirCol collaboration (work package 4 “Cryogenic Beam Vacuum System”), three FCC-hh beam screen (BS) prototypes have been tested at the Beam Screen Testbench Experiment (BESTEX) installed at the 2.5 GeV electron storage ring KARA (KARlsruhe Research Accelerator) light source at the Karlsruhe Institute for Technology (KIT). Each of the three BS prototypes, 2 m in length, implement a different design feature: 1) baseline design (BD), with electro-deposited copper and no electron-cloud (EC) mitigation features; 2) BD with set of distributed cold-sprayed anti-EC clearing electrodes; 3) BD with laser-ablated anti-EC surface texturing. The results of the measurements hereby presented provide relevant data related to photon stimulated desorption, photon reflectivity, photon induced heat loads and photo-electron generation during irradiation of these three BS prototypes with a FCC-hh type SR beam.

Author: GONZALEZ GOMEZ, Luis Antonio (INFN e Laboratori Nazionali di Frascati (IT))

Co-authors: Dr BAGLIN, Vincent (CERN); BELLAFONT, Ignasi; CASALBUONI, Sara (IBPT-KIT); CHIGGIATO, Paolo (CERN); GARION, Cedric (CERN); HUTTEL, Erhard; KERSEVAN, Roberto (CERN); PEREZ, Francis (CELLS)

Presenter: GONZALEZ GOMEZ, Luis Antonio (INFN e Laboratori Nazionali di Frascati (IT))

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