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## Study of Reflectivity and Photo Yield on FCC-hh proposed beam screen surfaces.

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In the Highest Energy Proton Circular Collider ever designed, FCC-hh, a large production of Synchrotron Radiation (SR) is expected. This SR causes heat load on the accelerator walls, photon stimulated desorption, production of secondary electrons, beam instability, etc. Thus, it is very important to have an experimental characterization of optical properties of technical surfaces, in particular reflectivity and photo yield. Measuring such properties on realistic candidates and in conditions as close as possible to the one that will actually occur in the machine is indeed a great experimental challenge. In FCC-hh, SR Light, with energies going from few eV to more than 4 KeV, will impinge on the accelerator walls at grazing angles smaller than 0.1 degrees. A systematic experimental campaign has been recently launched, using the Optics Beamline and the Reflectometer end station in Berlin, as an ideal tool to get realistic values to be used in simulations. We measured R and PY from clean and Carbon coated Copper surfaces with different roughness, as well as from LHC Cu beam screen (both on its flat part and on the Saw tooth structure) and from one specific representative of Laser treated Cu surface (LASE). Those measurements will be here presented, confirming the importance of directly measure specular as well as total reflectivity from surfaces with different shape, material and finish to correctly trace SR path and its effect on high energy future colliders.

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