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A New High-Intensity Proton Irradiation Facility at the CERN PS East Area

The proton and mixed-field irradiation facilities in the CERN PS East Area (known as IRRAD1 and IRRAD2), were heavily and successfully exploited for irradiation of particle detectors, electronic components and materials since 1992. These facilities exploited the particle bursts - protons with momentum of 24GeV/c - delivered from the PS accelerator in "spills"of about 400ms (slow extraction). With the increasing demand of irradiation experiments, these facilities suffered from a number of unpleasant restrictions such as the space availability, the maximum achievable particle flux and several access constraints. In the framework of the AIDA project, an upgrade of these facilities was proposed based on the assumption that the DIRAC experiment will be completed by the end of 2012 and its experimental apparatus dismounted in the CERN long shutdown (LS1) during 2013-2014. The new East Area irradiation facilities (EA-IRRAD) would then be installed in the area occupied by the DIRAC experiment. The proposal being accepted, the construction project of the new facilities has begun in November 2012. The facilities are now expected to be ready for commissioning during summer 2014. While the new proton facility (IRRAD) will continue to be mainly devoted to the radiation hardness studies for the High Energy Physics experimental community, the new mixed-field facility (CHARM) will mainly host irradiation experiments for the validation of electronic systems used in accelerators such the LHC. In this paper, we outline the characteristics of the new IRRAD proton facility in terms of layout, area equipment and potential for new irradiation experiments.

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