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[AS] Radiation performance of the Low Gain Avalanche Diodes developed by NDL and IHEP in China

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This paper studies the radiation hardness of low gain avalanche detector(LGAD) developed by the Novel Device Laboratory (NDL) in Beijing and the Institute of High Energy Physics (IHEP) of Chinese Academy of Sciences, in the context of an upgrade project of the ATLAS detector for the high luminosity phase of LHC. NDL LGAD sensors with different layouts, epitaxial resistivity and doping profile were irradiated up to 1.02×10^{15} neq/cm² by

70MeV protons at Cyclotron and Radioisotope Center (CYRIC). The timing resolution of NDL LGAD sensors reached 50 ps and the collected charge reached 3 - 4 fC after irradiation.

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