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CMS Hadronic Endcap Calorimeter Upgrade Studies for SLHC "Quartz Plate Calorimeter with Wavelength Shifting Fibers" UGUR AKGUN, University of Iowa, CMS COLLABORATION — Hadronic Endcap (HE) calorimeters of the CMS experiment cover the pseudorapidity range of from 1.4 to 3 on both sides of the CMS detector, contributing to superior jet and missing transverse energy resolutions. As the integrated luminosity of the LHC increases, the scintillator tiles used in the CMS Hadronic Endcap calorimeter will lose their efficiency. Here, we propose to replace the scintillator tiles in high radiation area with "radiation hard" quartz plates. To increase the light collection efficiency, the generated Cherenkov photons are collected by UV absorbing wavelength shifting (WLS) fibers. We constructed a 20 layer calorimeter prototype with WLS fibers embedded into quartz plates, and tested the hadronic and the electromagnetic capabilities at the CERN H2 area. We report the results of these test beams as well as the Geant4 simulations performed on the calorimeter prototype. We also discuss the radiation hard wavelength shifting fiber ideas.

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