

Abstract Submitted
for the APR10 Meeting of
The American Physical Society

**CMS Hadronic Endcap Calorimeter Upgrade Studies for SLHC
“P-Terphenyl Deposited Quartz Plate Calorimeter Prototype”** WARREN
CLARIDA, University of Iowa, CMS COLLABORATION — The LHC is going to
reach the designed value of $10^{34}\text{cm}^{-2}\text{s}^{-1}$ in 2013. The LHC luminosity will continue
to improve each year, reaching to $10^{35}\text{cm}^{-2}\text{s}^{-1}$ in 2023. We call this high luminosity
era the Super-LHC (SLHC). As the integrated luminosity of the LHC increases,
the scintillator tiles used in the CMS Hadronic Endcap calorimeters will lose their
efficiency. The CMS collaboration plans to substitute the scintillator tiles in the
original design with quartz plates. Various tests have proved quartz to be radiation
hard, but the light produced by quartz comes from Cerenkov process, which yields
fewer photons than scintillation. To increase the light production, we propose to
treat the quartz plates with radiation hard light enhancement tool, p-Terphenyl. The
test beam studies revealed a substantial light production increase on pTp deposited
quartz plates. We constructed a 20 layer calorimeter prototype with pTp coated
plates, and tested the hadronic and the electromagnetic capabilities at the CERN
H2 area. Here we report the results of these test beams as well as radiation damage
studies performed on p-Terphenyl.

Warren Clarida
University of Iowa

Date submitted: 19 Oct 2009

Electronic form version 1.4