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Year: 2016

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## Dose rate effects in the radiation damage of the plastic scintillators of the CMS Hadron Endcap Calorimeter

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**Abstract:** We present measurements of the reduction of light output by plastic scintillators irradiated in the CMS detector during the 8 TeV run of the Large Hadron Collider and show that they indicate a strong dose rate effect. The damage for a given dose is larger for lower dose rate exposures. The results agree with previous measurements of dose rate effects, but are stronger due to the very low dose rates probed. We show that the scaling with dose rate is consistent with that expected from diffusion effects.

DOI: <https://doi.org/10.1088/1748-0221/11/10/T10004>

Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-180031>

Journal Article

Published Version



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Originally published at:

CMS Collaboration; Canelli, Florencia; Kilminster, Benjamin; Aarrestad, Thea; Brzhechko, Danyyl; Caminada, Lea; de Cosa, Anna Paola; Del Burgo, Riccardo; Donato, Silvio; Galloni, Camilla; Hreus, Tomas; Leontsinis, Stefanos; Mikuni, Vinicius Massami; Neutelings, Izaak; Rauco, Giorgia; Robmann, Peter; Salerno, Daniel; Schweiger, Korbinian; Seitz, Claudia; Takahashi, Yuta; Wertz, Sebastien; Zucchetta, Alberto; et al (2016). Dose rate effects in the radiation damage of the plastic scintillators of the CMS Hadron Endcap Calorimeter. *Journal of Instrumentation*, 11(10):T10004.

DOI: <https://doi.org/10.1088/1748-0221/11/10/T10004>

ERRATUM

## Erratum: Dose rate effects in the radiation damage of the plastic scintillators of the CMS hadron endcap calorimeter

To cite this article: V. Khachatryan *et al* 2019 *JINST* **14** E08001

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## TECHNICAL REPORT

## Erratum: Dose rate effects in the radiation damage of the plastic scintillators of the CMS hadron endcap calorimeter

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on behalf of CMS-HCAL collaboration

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ERRATUM TO: [2016 JINST 11 T10004](#)

Subsequent to the publication of this paper, one of the hybrid photodiodes used as the photodetector was removed and highly localized damage on its photocathode was discovered. The study of the photodiode cathode was published in Review of Scientific Instruments 90, 02303 (2019). Because of the very localized nature of the damage, the calibration fiber readout was not affected, while the tile readout fibers were. The damage to the tile/fiber system is thus smaller than reported in this paper. As will be discussed in detail in an upcoming paper, the new dose constants increase by about a factor of 3.7 at 0.01 krad/hr. These numbers are subject to change pending collaboration review.

2019 JINST 14 E08001

