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Optical Transition Radiation Measurements of a High Intensity Low Energy Hollow Electron Beam on Electron Beam Test Facility

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Optical Transition Radiation (OTR) is commonly used in imaging systems of highly relativistic charged particle beams as the light yield and collection efficiency would increase with beam energy. For low beam energies, scintillating screens are typically preferred but would saturate or even get damaged when using high beam current. For such a beam, OTR screens can, therefore, still be an attractive diagnostic tool when using thermally resistant materials such as Glassy Carbon. This work presents the OTR based beam imaging measurements of a high-intensity low energy (7keV) hollow electron beam at the Electron Beam Test Stand at CERN. The mechanical design of the monitor as well as the expected OTR angular distribution are presented. Beam images performed with an aluminium oxide scintillating screen are also shown and compared to the OTR results.

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Footnotes

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Yes

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