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Cherenkov radiation from transparent plate for beam diagnostics

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The report presents the measurement results of the characteristics of optical Cherenkov radiation (ChR) in comparison with traditional transition radiation (TR). The experiment was carried out using an electron beam from the LINAC200 accelerator with an energy of 18 MeV. The radiation was detected at an angle of 90 degrees relative to the electron beam using the TAMRON lens with a focal length of 18–400 mm and the CCD camera (QHY533C, 3003X3003 pixels with size 3.76 mcm). As TR and ChR targets we used an aluminized silicon wafer and a corundum plate (0.5 mm thick). When focusing “on target”, the dimensions of the “light footprint” of a collimated electron beam with a diameter of 5 mm on both targets were measured.

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