

Optical Cherenkov Radiation from an Inclined Plate as a Tool for Angular Beam Diagnostics

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In the paper [1] authors presented results of the measurements of the optical Cherenkov radiation generated by 255 MeV electrons passing through an inclined diamond plate with a thickness 50 micrometers. They showed that intensity of the registered photons (a part only from the whole Cherenkov cone, which is extracted into vacuum from the inclined plate) is high enough for certain detection.

We propose to use such an effect to determine a beam divergence measuring a dependence of the Cherenkov radiation yield on the inclination angle for a fixed detector position.

For electron energy ~ 1 GeV and the quartz plate thickness 4 mm it is possible to measure a divergence at the level 10^{-4} rad.

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References

- [1] Y.Takabayashi, E.I.Fiks, Yu.L.Pivovarov, Phys. Letters A **379** (2015) 1032.

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