## Feasibility of Optical Cherenkov Radiation for a Detection of Tokamak Runaway Electrons with Energy up to a few MeV

 $\underline{B.Alekseev}^{a,1}, \ E.Baksht^b, \ M.Erofeev^b, \ E.Lipatov^b, \ V.Oleshko^{a,b}, \ A.Potylitsyn^a, \ V.Tarasenko^{a,b}, \ A.Vukolov^a$ 

<sup>a</sup> National Research Tomsk Polytechnic University, Tomsk, Russia
<sup>b</sup> Institute of High Current Electronics, Tomsk, Russia

Recently authors of the work [1] proposed to use Cherenkov detectors to register runaway electrons generated in tokamak installations with energies from tens keV up to a few MeV. In the experiments [2, 3] we have measured Cherenkov radiation (ChR) characteristics generated by 400 keV electrons [2] and 6 MeV electrons [3] from thin quartz, leucosapphire and diamond plates. We have showed that for low energy electrons (less than 400 keV) a geometry of ChR detector can be chosen as traditional one with extraction of the ChR light through a plate surface perpendicular to an electron beam. Nevertheless, for relativistic electrons ( $E_e = 6$ MeV) such a geometry doesn't allow to detect ChR and a plate has to be inclined respect to the electron beam. In the former case, a multiple scattering process in a plate leads to a significant "smoothing" of the ChR angular distribution, but for the latter one, this effect is suppressed. In the report we have simulated spectralangular characteristics of ChR using GEANT4, compared with experimental data, and showed a necessity to choose measurements geometry for the required electron energy range, which depends on the radiator material also.

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## References

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