

## OBSERVATION OF CHERENKOV EFFECT NEAR L- ABSORPTION EDGE OF AL

*Sergey Uglov<sup>a,1</sup>, Valery Kaplin<sup>a</sup>, Artem Vukolov<sup>a</sup>,  
Leonid Sukhikh<sup>a</sup>, Pavel Karataev<sup>b</sup>*

<sup>a</sup> National Research Tomsk Polytechnic University, Tomsk, Russia

<sup>b</sup> Royal Holloway, University of London, Egham, England

According to theoretical estimates (e.g., [1]), due to a jump of the dielectric permittivity of Al near the L edge of photon absorption ( $E = 72.6$  eV) the Cherenkov radiation (CR) must be observed at the angles  $\theta = 10^\circ - 15^\circ$  relative to the electron path. This report presents the results of experimental study of the angular density of extreme ultraviolet (EUV) radiation generated by 5.7 MeV electrons from a 9  $\mu\text{m}$  thick Al foil in forward direction. The angular distributions of EUV radiation were examined using a multilayer Mo/Si mirror located in the cone of CR. For a crosscheck the spectral properties of the radiation measured from the Al foil were compared with the properties of the radiation from a Mylar foil, for which the CR in the EUV range should not be observed. The angular distributions of EUV radiation reflected by the Mo/Si mirror were measured for several angles inside the radiation cone. The comparison of the experimental results and calculations has shown that the CR with photon energy near the L edge of absorption in Al was observed for the first time in this experiment.

The research was supported by the Ministry of Education and Science, the state order No. 3761, and by the Russian Foundation for Basic Research, the project No. 14-02-01032.

### References

- [1] Knults W., et al. Appl. Phys. Lett. V **79**, No.18 (2001) 2999

<sup>1</sup> Corresponding author: uglovsr@mail.ru