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Radiation hardness study of optical glasses for the DIRC technology

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The radiation hardness of optical materials and stability of optical properties in aggressive radiation environment is one of crucial issues for the detectors based on the detection of Cherenkov light, such as DIRC(s) at the Electron-Ion Collider at the Brookhaven National Laboratory. This contribution presents the results of radiation hardness tests performed with the following optical materials: fused silica, optical sapphire glass, and BaF. The irradiation was performed on the Microtron MT-25 at Flerov laboratory of Joint Institute for Nuclear Research (JINR, Dubna, Russia), and theoretical calculations of the consumed dose are presented. The light transmittance over a wide range of wavelengths was tested for the consumed doses up to 20 MRad.

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