

Tile detector configurations testing for the SPD Beam-Beam Counter prototype.

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The Spin Physics Detector is an experiment at NICA designed to study the spin structure of the proton and deuteron and other spin-related phenomena using polarized beams. Two Beam-Beam Counters (BBCs) will be installed symmetrically aside from the interaction point in the end-cups of SPD setup and will serve as a tool for beam diagnostics including local polarimetry. The outer part of the BBC wheel is based on fast scintillator tiles and cover the polar angles between 60 and 500 mrad.

In this talk, we discuss testing different materials configurations for the BBC prototype based on scintillator tiles. The light collection depends on material combinations - different fibers (Saint Gobain BCF91AS, BCF92S, and Kuraray Y-11), different ways of covering tile surface (Matted and double covered with Tyvek sheets tiles), as well as different optical cements (CKTN mark E, OK-72) were used in the study. SensL 1x1 mm² SiPM readout provides an opportunity to measure light collection dependence with high energy resolution using radioactive source and cosmic rays.

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