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Progress and perspectives of FARICH R&D for the Super Charm-Tau Factory project.

Particle identification system based on Focusing Aerogel RICH (FARICH) detector is considered as an option for the future experiments at the Super Charm-Tau Factory (Russia). The progress of FARICH R&D at the the Budker Institute of Nuclear Physics is presented. New samples of focusing 4-layer aerogels with maximal refractive index 1.065 were produced in 2020-2021. First beam test results with relativistic electrons demonstrate single photon resolution $SPR=8.5^{\circ}$ mrad. According to simulation results, the aerogels with such SPR are able to provide μ/π -separation at the level of more than 3 standard deviations for tracks with momentum 1.5 GeV/c. The first version of electronics to readout SiPM arrays based on TDC realized on FPGA (FPGA-TDC) was developed and manufactured. The first test results are presented.

Primary experiment

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