



Development of Belle-II TOP detector and its MCP-PMT

Saturday, August 6, 2016 6:00 PM (2 hours)

We have been developing a Cherenkov ring-imaging detector as a barrel particle identification device, named TOP (Time-Of-Propagation), for the Belle-II experiment. In this presentation, we will show the overview of TOP detector, the production results and focus on the MCP-PMT development and its improved performance.

We have successfully produced the detector modules, which consist of the 2.7m long quartz radiator, supporting mechanics, MCP-PMTs and readout electronics, by developing many tools and method.

Along with the construction, we also have developed the lifetime-improved MCP-PMT with Hamamatsu photonics, to keep the performance for long period even under higher background environment than the expected rate at SuperKEKB. We adopted the ALD technique to the micro-channel-plate and applied further improvement at the production step, then the mass production for the TOP detector was successfully done. We will present the obtained performance of the MCP-PMTs for the gain, time resolution, quantum efficiency and the lifetime.

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