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## Assembly and Installation of the Belle II TOP Detector

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The Belle II experiment will start up the detector commissioning from early 2017 and will carry out various physics programs from 2018, where good particle identification is demanded. The Time-of-Propagation (TOP) detector is responsible for  $\pi^\pm/K^\pm$  separation in the barrel region of the Belle II spectrometer. It has 16 detector modules cylindrically arranged around the beam line at a radius of about 1.2 m. A single detector module mainly consists of a synthetic silica Cherenkov radiator and photo-detector arrays with readout electronics attached to a radiator end. The TOP detector identifies a particle species based on the propagation times and detected positions of the Cherenkov photons that are propagated through the radiator utilizing the total internal reflection.

The radiator has the approximate dimensions of 2700 mm (L) x 450 mm (W) x 20 mm (T), where four components are glued together. It is crucial to mechanically support such a “thin”, glued radiator, managing the material budget, flat module attitude and limited installation space. Various efforts have been made for developing the mechanical structures and the assembly and installation procedures. Aluminum Honeycomb panels with curved shapes have been developed for the detector module container to achieve high rigidity with low material budget. The detector modules have been assembled with the precision alignment of the mechanical components, preventing from overstressing the radiator. Support structures have been developed to reinforce the single module rigidity, maintaining the flat module attitude from the assembly till the installation. The installation procedure has been established to maintain the detector module sag below 0.5 mm and to manage the tight installation clearance.

The assembly and installation of the detector modules has been and will be completed in April and May 2016, respectively, and will be discussed with the features of the mechanical structure.

### Registered

Yes

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