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Track reconstruction in the HA-TPC of the upgraded near detector of T2K

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T2K (Tokai to Kamioka) is a long-baseline neutrino oscillation experiment that has taken data since 2010. After having obtained the first hints of CP violation in the leptonic sector, it has entered a second phase with an upgrade of its accelerator beam line and suite of near detectors. Among the different elements of this upgrade, two High-Angle Time Projection Chambers (HA-TPC) were installed. Each endplate of these HA-TPC is equipped with Encapsulated Resistive Anode MicroMegas (ERAM). This innovative technology owes its originality to the use of a layer of insulator and a layer of glue to engender charge spreading on the detector's pads. Several test beam and cosmics data taking campaigns have validated these HA-TPC and showed an even better spatial resolution than the Bulk MicroMegas technology that equips the vertical TPC already present for the first phase of T2K. New reconstruction algorithms had to be developed to fully exploit the capabilities of these detectors. These are presented in this poster together with the first performances they allowed to obtain.

Poster prize

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