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Bakelite RPC prototype with new method of linseed oil coating

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Resistive Plate Chamber (RPC) is a very popular gaseous detector used in High-Energy Physics (HEP) experiments for triggering and tracking.

Keeping in mind the requirements of detectors having high-rate handling capability, cost-effectiveness, and large area coverage to be used in future HEP experiments, commercially available bakelite plates with moderate bulk resistivity are used to build RPC prototypes.

In general bakelite RPCs are fabricated with a linseed oil coating on the inner surface to make it smooth which helps to reduce the micro-discharge probability. A new method of linseed oil coating has been developed for the bakelite RPC. In conventional bakelite RPC, the linseed oil coating is done after making the gas gap. In this particular work, the linseed oil coating is done before making the gas gap. After the linseed oil coating, the plates are cured for several days. The advantage of this procedure is that after linseed oil coating it can be checked visually whether the curing is properly done, or any uncured droplet of linseed oil is present. The detector is characterised with Tetrafluoroethane ($C_2H_2F_4$) gas and also with conventional Tetrafluoroethane, Iso-butane ($i-C_4H_{10}$) gas mixture. The details of the fabrication, measurement and test results will be presented.

Session

Future Experiments and Detector Development

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Session Classification: Poster - 3