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## Characterisation of a new RPC prototype using conventional gas mixture

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Resistive Plate Chamber (RPC) detectors are currently used in High Energy Physics (HEP) experiments for triggering and tracking purposes for their low-cost of fabrication, high efficiency ( $> 90\%$ ) and good time resolution ( $\sim 1-2$  ns). RPC is also a potential candidate for high-resolution medical imaging.

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.

A RPC prototype is built using indigenous bakelite sheet and the inner sides of the electrode plates are coated with linseed oil using a new technique. The newly built detector is tested with 100% Tetrafluoroethane ( $C_2H_2F_4$ ) and efficiency plateau  $\sim 95\%$  from 9.4 kV onwards and  $\sim 85\%$  from 10.1 kV onwards are obtained for the -15 mV and -20 mV discriminator threshold settings respectively.

The chamber is recently tested with conventional 90% Tetrafluoroethane ( $C_2H_2F_4$ ) and 10% Isobutane ( $iC_4H_{10}$ ) gas mixture. The HV conditioning with time of the chamber is also studied with the conventional gas mixture. The new results will be presented.

### Collaboration

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