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PI Surface Conductivity Measurements

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The gain in nearly all MPGDs can be calculated with a precision around 20 % - with the notable exception of GEMs.

We know from systematic studies that the discrepancy (a factor of 2 in a standard GEM) can not be due solely to the modelling of the holes, to the accuracy of the ionisation cross section and to Penning effects.

Surface charge increases the gain by 20 % in a dry standard GEM and therefore does not explain the difference between calculation and measurement.

However, this gain increase has repercussions on the accuracy of dE/dx particle identification.

Surface charge evacuation depends on the surface conductivity which in turn depends on the humidity of the polyimide.

Few systematic measurements of the surface conductivity have been published and

here we report on a dedicated set-up for such measurements in the recently established physics laboratory in Bursa.

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