

3rd Academy-Industry Matching Event on Photon Detection and RD51 Mini-Week

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Status of gas gain measurements and calculations in Ne-CO₂ mixtures

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Systematic gas gain measurements in Ne-CO₂ mixtures at different pressures with varying CO₂ concentrations are used to obtain the rates of the excitation induced ionisations (Penning energy transfer probabilities). Over-exponential increases on the gain curves, due to the secondary processes in avalanche development have been investigated with an effective parameter. Calculations for the pure CO₂ mixtures confirms that Magboltz use perfectly correct cross sections. The production frequencies of the direct ionisations refers that the largest part of the gain comes from CO₂ ionisations. Three-body energy losses of excited Ne atoms can be a reason of the energy transfer drops observed at high CO₂ percentages.

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