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Updated IBIC and Ion-TCT study on LGAD at RB: Work in Progress on Effects of Screening in LGADs

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This work in progress is three folded. Firstly, gain anomalous behavior was studied in a such way that ion beams (C, He, Li, H⁺) and their energies were chosen so that Bragg peaks correspond to the same depth in LGAD but significantly different charge was deposited. Secondly, protons of 4 MeV energy were used to irradiate LGAD from two sides: back and front. The aim was to systematically observe the contributions of impact ionization and multiplication of holes and electrons in more distinguishable way, knowing at the same time the most probable depth where induced charge should be mostly generated. However, since slowing down of ions in matter is accompanied by a spread of beam energy, this so called energy straggling effect has to be studied in depth. The difference in energy lost when 4 MeV H⁺ ion is injected from front and back side is considered too. Thirdly, inter-pixel distance vs bias was mapped using probing H⁺ ion beams: 0.75, 1, 1.5 and 1.5 MeV.

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