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Characterization of semiconductor detectors using IBIC imaging method

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The Ion Beam Induced Current (IBIC) technique available at the Accelerator laboratory of the Ruder Boskovic Institute is using scanning microbeam to study the properties of various semiconductor devices. The characteristics of the IBIC provide us with information of the response of the material and the coordinate of the beam impact point. The focused IBIC technique allows us to map 2D spatially resolved Charge Collection Efficiency (CCE) of different pad and pixelated detector structures with few micrometer resolution.
Semiconductor devices, made of Si and CdTe, were characterized with 2 MeV proton microprobe with different bias settings to create a detailed charge collection studies. In this work we present results of IBIC scans, study the impact of anode material selection, and analyse the performance of the detectors.

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