

Development of IHEP low gain avalanche devices for ATLAS HGTD project

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Low-Gain Avalanche Detector (LGAD) with time resolution better than 50ps has been chosen as the sensors for HGTD project and have so far been developed by several institutes. This talk will show measurement results of first version LGAD sensors designed by the Institute of High Energy Physics (IHEP) and fabricated by Institute of Micro Electronics (IME). Time resolution of IHEP-IMEv1 sensors are better than 35ps and the collected charges are larger than 20fC before irradiation. The properties of IHEP-IMEv1 sensors fulfill the required specifications of sensors before irradiation for ATLAS HGTD project. Second version of LGAD sensors, IHEP-IMEv2, including 15×15 sensor arrays, will optimize carbon injection process to improve the irradiation hardness of LGAD sensors. The design and wafer testing results of IHEP-IMEv2 will also be discussed.

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