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Performance of hybrid detector of USTC-IME LGAD and LATIC ASIC chip

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LGAD(Low Gain Avalanche Detector) is used in the HGTD(High Granularity Time Detector) of ATLAS phase II upgrade due to its excellent time resolution and spatial granularity. In order to utilize its high granularity advantage, it is necessary to bond the detector with a front-end readout chip of the same channel size using the flip chip process. The front-end readout chip is used to collect signals, amplify, discriminate, and measure the detector signals arrival time. The LGAD electronics team at USTC has developed a prototype chip called LATIC(LGAD Amplification and Timing IC) for LGAD readout. The prototype chip has a 5x5 structure and has been bonded with USTC IME sensor. The structure, flip chip bonding, and test results after flip chip bonding will be introduced.

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