

Test beam measurements of BNL and HPK AC-LGADs

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We present measurements of AC-LGADs performed at Fermilab test beam facility. We also present first test beam results of sensors which utilize a buried gain layer. The buried layer is formed by patterned implantation of a 50-micron thick float zone substrate wafer-bonded to a low resistivity carrier, followed by epitaxial deposition of the amplification region. We studied strip and pixel sensors produced by BNL and HPK. Measurements are performed at our upgraded setup that utilizes high precision telescope tracker, and simultaneous readout of up to 7 channels per sensor, which allows detailed studies of charge sharing characteristics. We study several reconstruction algorithms to optimize position and time resolution. These measurements allow us to assess the differences in designs between different manufacturers and optimize them, based on experimental performance in test-beams.

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