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A serializer ASIC of 16 Gb/s for data transmission over fiber for detector front-end readout in a particle experiment

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We report an ASIC development based on a commercial 0.25-micron silicon-on-sapphire CMOS technology. This ASIC is a dual channel serializer sharing one LC-PLL with 8 Gb/s each channel and a total data throughput of 16 Gb/s for each chip. The prototype packaged in QFN is measured from 7.2 to 8.5 Gb/s each channel, limited by the tuning range of the PLL. This design is for an optical link that is under development to read out the front-end board in the trigger upgrade of the Liquid Argon Calorimeter (LAr) in ATLAS. We will present design details and prototype measurement results. We will also discuss the experience on the QFN package for high-speed signals.

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