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Time-based electronics for T-SDHCAL

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SDHCAL (Semi-Digital Hadronic Calorimeter) is a highly granular hadronic calorimeter based on PFA (Particle Flow Algorithms). A prototype of SDHCAL was completed and tested in 2011 and 2012.
The idea of T-SDHCAL (T for Timing) is intended to gain better reconstruction of particle energy. High resolution timing technics can help separate close-by showers and reduce the confusion for a better PFA application.
On behalf of SDHCAL group in Shanghai Jiaotong University, the work I want to present is to develop a high-resolution timing electronic system for T-SDHCAL. It is a system that can be generally applied to mRPC readouts. This system is based on Petiroc-2B, an ASIC developed by OMEGA. We have built a prototype with 2 Petiroc, 64 channels. The work includes PCB design, FPGA programming, data transfer based on ethernet, etc. We have completed injection tests, which validates the design of the system and the timing resolution is under 50ps, meeting the requirements of T-SDHCAL.
The next step of our work is to complete beam tests with mRPCs, and build a large-sized (1m*1m) prototype.

Minioral

No

IEEE Member

No

Are you a student?

Yes

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