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The Jiangmen Underground Neutrino Observatory (JUNO) is a medium-baseline neutrino experiment under construction in China, with the goal to determine the neutrino mass hierarchy. The JUNO electronics readout system consists of underwater front-end electronics system and outside-water back-end electronics system, these two parts are connected by 100-meter Ethernet cables and power cables.
The back-end card (BEC) is a part of the JUNO electronics readout system used to link the underwater boxes to the trigger system and transmit system clock and trigger signals. Each BEC connects to 48 underwater boxes, and in total around 150 BECs are needed. It's essential to verify the physical layer links before applying real connection with under water system. Therefore, our goal is to build an automatic test system to check the physical link performance.
The test system is based on a custom designed FPGA board, in order to make the design general, we use only JTAG as the interface to PC. The system can generate and check different data pattern at different speed for 96 channels simultaneously, test results of 1024 continuously clock cycles are automatically uploaded to PC periodically. We will describe the setup of the automatic test system of the BEC and we will present the latest test results.

Minioral

Yes

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No

Are you a student?

Yes

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