

The trigger and data acquisition system of the TRIDENT phase-I detector

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TRIDENT is a future, next-generation neutrino telescope to be built in the South China Sea, designed to discover astrophysical neutrino sources and probe fundamental physics over astronomical distances. An optimal trigger and data acquisition (TDAQ) system is needed to ensure events of interest are recorded with high efficiency, while also minimizing the rate of backgrounds during data transmission. For example, radiation from naturally occurring ^{40}K decays in seawater creates a large background that would dominate TRIDENT's data bandwidth. A carefully crafted TDAQ system built upon optical detection modules with a multi-channel PMT design can be used to strongly mitigate this effect. TRIDENT's phase-I detector, a pilot array consisting of ten strings, will offer an excellent opportunity to commission the needed technologies for the future full TRIDENT array. This poster describes the design of the TDAQ system for TRIDENT phase-I and presents preliminary evaluations of a lab-built TDAQ prototype.

Poster prize

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