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KM3NeT real-time analysis framework

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KM3NeT is a deep-sea neutrino observatory under construction at two sites in the Mediterranean Sea. The ARCA telescope (Italy), aims at identifying and studying TeV-PeV astrophysical neutrino sources, while the ORCA telescope (France), aims at studying the atmospheric neutrino oscillations in the few GeV range. Since they are optimised in complementary energy ranges, both telescopes can be used to do neutrino astronomy from few MeV to few PeV, despite of their different primary goals. The KM3NeT observatory takes active part to the real-time multi-messenger searches. These searches allow to study transient phenomena by combining information from the simultaneous observation of complementary cosmic messengers with different observatories. In this respect, a key component is the real-time distribution of alerts when potentially interesting detections occur, in order to increase the discovery potential of transient sources and refine the localization of poorly localized triggers, such as gravitational waves. The KM3NeT real-time analysis framework aims at performing the reconstruction of all ARCA and ORCA events, searching for spatial and temporal coincidences around received alerts after having filtered them, selecting a sample of interesting events to send alerts and performing the core-collapse supernova analysis. This contribution deals with the current status of the KM3NeT real-time analysis framework and its first results.

Submitted on behalf of a Collaboration?

Yes

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