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The KM3NeT online analysis system

KM3NeT is a multi-purpose neutrino detector under construction in the Mediterranean Sea and currently taking data with a partial detector configuration. It is composed of a network of two deep-sea water-Cherenkov detectors located at two different sites: ARCA (Italy), optimised for the detection of high-energy cosmic neutrinos in the TeV-PeV range, and ORCA (France), optimised for low-energy atmospheric neutrinos in the few-GeV range. Both detectors are sensitive also to MeV neutrinos emitted by core-collapse supernovae, allowing them to be used for neutrino astronomy across an energy range from a few MeV to a few PeV. KM3NeT is actively involved in real-time multi-messenger searches, which aim at studying transient astrophysical phenomena by the simultaneous observation of different cosmic messengers. Given their large field of view and almost 100\% duty cycle, neutrino telescopes are ideally suited to early notify other multi-messenger facilities when interesting neutrino candidates are detected and to perform follow-ups of external triggers. To achieve these goals, the KM3NeT Collaboration has set up an online analysis platform that continuously performs real-time reconstruction and classification of all ARCA and ORCA events, core-collapse supernova searches, and follow-ups of received alerts. This contribution reports about the current status of the KM3NeT online analysis system.

Collaboration(s)

KM3NeT

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