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Online Analysis Framework for Multi-Messenger Astronomy with KM3NeT

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KM3NeT is a Cherenkov-based neutrino telescope under construction in the depth of the Mediterranean sea. It will consist of two main detectors, ARCA and ORCA, sensitive to energies from MeV to PeV. Presently a fraction of both detectors is already data-taking with a completion date foreseen for 2028.
The telescope design allows for a high duty-cycle, a large field of view, and an unprecedented angular resolution which can be as good as 0.1 deg. To turn that into an asset for multi-messenger astronomy, KM3NeT should be able to identify interesting neutrino candidates and send the relevant information of the reconstructed events in a very short time, allowing for a prompt follow-up of events from transient or variable sources by other observatories. In addition, KM3NeT can provide a follow-up of alerts emitted by partner experiments and be used to refine the position of poorly localized triggers, like gravitational wave alerts.

This contribution reports on the status of the KM3NeT online analysis framework that has been running since October 2022. The current performance for KM3NeT/ARCA and KM3NeT/ORCA detectors together with a summary of the most relevant results will be presented, as well as some of the tasks performed by the WP4.3 team of the KM3NeT-INFRADEV2 project.

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