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Reconstruction of muon bundles in KM3NeT detectors using machine learning methods

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The network of two next-generation underwater Cherenkov neutrino telescopes: ARCA and ORCA is being successively deployed in the Mediterranean Sea by the KM3NeT Collaboration. The focus of ARCA is neutrino astronomy, while ORCA is mainly dedicated to neutrino oscillation studies. Both detectors are already operational in their intermediate states and collect valuable results, including the measurements of the atmospheric muons produced by cosmic ray interactions. This work explores the potential of intermediate as well as complete detector configurations of ARCA and ORCA to observe events composed of multiple muons, originating from a common primary cosmic ray, called muon bundles. An approach to infer the total number of observed muons in a bundle as well as their total energy and even the energy of the primary will be presented.

Primary author(s) : Dr KALACZYŃSKI, Piotr (CAMK PAN); ON BEHALF OF THE KM3NET COLLABORATION

Presenter(s) : Dr KALACZYŃSKI, Piotr (CAMK PAN)

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