

GNNs applications in KM3NeT/ARCA

martedì 18 giugno 2024 17:30 (2 ore)

The KM3NeT next generation deep-sea neutrino telescopes are currently under construction in the Mediterranean Sea. Two water-Cherenkov neutrino detectors, ARCA and ORCA, are located in two different sites, south-east of Portopalo di Capopassero (Italy) and close to Toulon (France), respectively. The KM3NeT/ARCA telescope, a cubic kilometer volume detector, is optimised for the detection of high-energy astrophysical neutrinos in the TeV-PeV range. Once completed, the detector will consist of 230 Detection Units, each housing 18 Optical Modules. In order to search for neutrino signals, a high background rejection power is needed and deep learning techniques provide promising methods for achieving this result. The flexibility of the so-called Graph Neural Networks (GNNs) suits perfectly the topology of a complex detector such as KM3NeT.

This contribution will be focused on two interesting applications of GNNs: discrimination of signal events from the background, mainly composed of atmospheric induced events, and energy and direction event reconstruction.

Poster prize

Yes

Given name

Surname

First affiliation

Second affiliation

Institutional email

Gender

Collaboration (if any)

KM3NET

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Classifica Sessioni: Poster session and reception 1

Classificazione della track: Astrophysical neutrinos