

**3rd Workshop on Graph  
Neural Networks for Neutrino  
Telescope Event  
Reconstruction (GraphNeT III)**

**Report of Contributions**

Contribution ID: 4

Type: **not specified**

## GraphNeT overview

*Tuesday, 2 May 2023 09:15 (30 minutes)*

Introduction to the GraphNet package: Vision, status, achievements, plans, roadmap

**Presenter:** SØGAARD, Andreas

**Session Classification:** Presentations

Contribution ID: 5

Type: **not specified**

## Representation learning using Graph Neural Networks

*Tuesday, 2 May 2023 09:45 (45 minutes)*

Learning compact and continuous representation spaces for discrete and non-Euclidean objects such as graphs can be useful to study their properties and perform meaningful vector manipulations that can translate back into the data space. In this session, we will look into graph neural network based regularised auto-encoders that can learn embedding spaces, that can also be conditioned on additional physical properties.

**Presenter:** SELVAN, Raghavendra (DIKU)

**Session Classification:** Presentations

Contribution ID: 6

Type: **not specified**

## IceCube Kaggle Challenge

*Tuesday, 2 May 2023 11:00 (30 minutes)*

<https://www.kaggle.com/competitions/icecube-neutrinos-in-deep-ice/overview>

**Presenter:** ELLER, Philipp (TUM)

**Session Classification:** Presentations

Contribution ID: 7

Type: **not specified**

## Galactic plane search with DL in IceCube

*Tuesday, 2 May 2023 11:30 (30 minutes)*

**Presenter:** HÜNNEFELD, Mirco

**Session Classification:** Presentations

Contribution ID: 8

Type: **not specified**

## GraphNeT results

*Wednesday, 3 May 2023 09:00 (45 minutes)*

Overview of physics analyses and studies that have been carried out in the context of GraphNeT, their impact on physics, and possible future directions.

**Presenter:** ØRSØE, Rasmus

**Session Classification:** Presentations

Contribution ID: 9

Type: **not specified**

## PyG 2.0

*Wednesday, 3 May 2023 09:45 (45 minutes)*

**Presenter:** FEY, Matthias (PyG and kumo.ai)

**Session Classification:** Presentations

Contribution ID: **10**

Type: **not specified**

# **Automatic hyperparameter optimization for Graph Neural Networks**

*Wednesday, 3 May 2023 11:00 (35 minutes)*

**Presenter:** HENNIG, Lukas

**Session Classification:** Presentations



Contribution ID: **11**

Type: **not specified**

## **Point-source search in IceCube, integration with GraphNeT**

*Wednesday, 3 May 2023 11:35 (35 minutes)*

**Presenter:** KONTRIMAS, Tomas

**Session Classification:** Presentations

Contribution ID: **16**

Type: **not specified**

## Setup

*Monday, 1 May 2023 15:00 (2 hours)*

Work with GraphNeT developers to set up the package in your regular working environment, to ensure that you are ready for the hackathons during the rest of the workshop.

**Session Classification:** Hackathons

Contribution ID: **18**

Type: **not specified**

# Welcome

*Tuesday, 2 May 2023 09:00 (15 minutes)*

**Presenter:** SØGAARD, Andreas

**Session Classification:** Presentations

Contribution ID: **19**

Type: **not specified**

## Ideas for IceCube

*Wednesday, 3 May 2023 12:10 (20 minutes)*

**Presenter:** PETERSEN, Troels

**Session Classification:** Presentations

Contribution ID: 20

Type: **not specified**

## Roadmap towards v2.0 –mini-workshop

*Thursday, 4 May 2023 11:00 (1h 10m)*

**Presenter:** SØGAARD, Andreas

**Session Classification:** Presentations

Contribution ID: 21

Type: **not specified**

## Summary, next workshop, and goodbye

*Thursday, 4 May 2023 12:10 (20 minutes)*

**Presenter:** SØGAARD, Andreas

**Session Classification:** Presentations

Contribution ID: 22

Type: **not specified**

## Event Classification for the ESSnuSB using GNNs

*Tuesday, 2 May 2023 12:00 (30 minutes)*

**Presenter:** IVERSEN, Kaare Endrup (Lund University)

**Session Classification:** Presentations

Contribution ID: 23

Type: **not specified**

## **Poster - Improving the direction and energy estimation of low-energy events in ANTARES with machine learning**

*Tuesday, 2 May 2023 17:00 (5 minutes)*

**Presenter:** GARCÍA MÉNDEZ, Juan (Universitat Politècnica de València)

**Session Classification:** Presentations



Contribution ID: 24

Type: **not specified**

## **Poster - Impact of muon deflections on angular muon reconstructions**

*Tuesday, 2 May 2023 17:05 (5 minutes)*

**Presenter:** GUTJAHR, Pascal

**Session Classification:** Presentations

Contribution ID: 26

Type: **not specified**

## **Poster - Detection and reconstruction of GeV neutrinos with IceCube**

*Tuesday, 2 May 2023 17:10 (5 minutes)*

**Presenter:** KRUISWIJK, Karlijn

**Session Classification:** Presentations

Contribution ID: 27

Type: **not specified**

## **Poster - Improving the sensitivity of KM3NeT in the MeV-GeV range using a GCN**

*Tuesday, 2 May 2023 17:15 (5 minutes)*

**Presenter:** MAURO, Jonathan

**Session Classification:** Presentations

Contribution ID: 29

Type: **not specified**

## **Poster - Ideas to measure the prompt component of the atmospheric muon flux**

*Tuesday, 2 May 2023 17:20 (5 minutes)*

**Presenter:** NESTE, Ludwig (TU Dortmund University)

**Session Classification:** Presentations

Contribution ID: **30**

Type: **not specified**

## **Industry presentation - TBD**

**Session Classification:** Presentations

Contribution ID: 32

Type: **not specified**

## Roadmap towards v2.0 –mini-workshop introduction

*Thursday, 4 May 2023 10:00 (30 minutes)*

**Presenter:** SØGAARD, Andreas

**Session Classification:** Presentations