



Contribution ID: 28

Type: **not specified**

## Improved selective background Monte Carlo simulation at Belle II with graph attention networks and weighted events

*Monday 6 November 2023 12:15 (15 minutes)*

When measuring rare processes at Belle II, a huge luminosity is required, which means a large number of simulations are necessary to determine signal efficiencies and background contributions. However, this process demands high computation costs while most of the simulated data, in particular in case of background, are discarded by the event selection. Thus, filters using graph neural networks are introduced at an early stage to save the resources for the detector simulation and reconstruction of events discarded at analysis level. In our work, we improved the performance of the filters using graph attention and investigated statistical methods including sampling and reweighting to deal with the biases introduced by the filtering.

**Authors:** YU, Boyang; Dr HARTMANN, Nikolai (LMU Munich); SCHINNERL, Luca; KUHR, Thomas (Ludwig Maximilians Universitat (DE))

**Presenter:** YU, Boyang

**Session Classification:** Generative Models and Simulation