Executive summary

What is this contribution about?

Deep-learning based reconstruction of the neutrino direction and flavor from radio detector data (10^{17} eV - 10^{19} eV).

Why is it relevant / interesting?

We show for the first time how sensitive a radio detector is to the neutrino flavor. We also quantize the obtainable angular resolution.

What have we done?

A deep neural network was designed and trained to predict the neutrino flavor and direction. We used the NuRadioMC code to create a large training dataset.

What is the result?

Directly from raw data without any additional information, ν_e-CC interactions can be distinguished from all other interactions with 90% accuracy at high energies.
The direction can be reconstructed withing a few degrees even for ν_e-CC events that are affected by the LPM effect.