Contribution ID: **30** Type: **On-site planned, but remote also possible**

Identification of non isolated tau leptons with ML techniques

Among charged leptons, taus are the only ones able to decay hadronically. Their hadronic decays are characterized by the presence of charged hadrons occasionally accompanied by an electromagnetic shower. This makes their identification challenging when the tau is produced close to jets, and limits the efficiency of studies involving tau leptons produced in high multiplicity events like HHH -> 2 tau + 4 b-jets or ttX -> 2 tau + jets.
The project aims at constructing a dedicated machine-learning algorithm to identify taus in such high multiplicity processes.

Field

B1: Particle physics analysis (software-oriented)

DESY Place

Hamburg

DESY Division

FH

DESY Group

CMS

Special Qualifications:

The project will be mostly focused on the use of machine learning techniques. As such the student should have a decent level of preparation with the following programming languages:
-python
-bash
-basic knowledge of ROOT is preferred but not required.

If the student has prior knowledge of particle physics and/or machine learning techniques it would also be useful.

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