

**Quantum Technology
Initiative Journal Club**

Report of Contributions

Contribution ID: 2

Type: **not specified**

Jogi Suda Neto (São Paulo State University (UNESP))

Thursday 10 October 2024 16:00 (40 minutes)

TITLE: equivariant quantum machine learning and the quest for symmetry discovery at high energies

ABSTRACT:

inding signatures of new physics in particle colliders often involves discriminating anomalous signals against conventional backgrounds. On the other hand, recent works have shown plenty of evidence that quantum machine learning (QML) models that have no inductive biases suffer from poor trainability and lack of generalization. Aiming at data efficiency and symmetry-preserving properties, we develop a Lie-equivariant quantum graph neural network (Lie-EQGNN) for jet tagging. Since Lorentz group equivariance has been shown to be beneficial for this task, we apply Lie-EQGNN for quark-gluon jet discrimination and show its performance is on par with its classical state-of-the-art counterpart Lorentznet.

Presenter: NETO, Jodi Suda (São Paulo State University (UNESP))

Session Classification: CERN QTI Journal CLUB