



## Doctoral Student Project

### Position C: Unsupervised Learning on a Quantum Computer

Supervisor: M. Pierini

In the recent past, unsupervised learning applications have been proposed for several aspects of data processing at particle colliders, for instance as a way to speed up the simulation of LHC collisions, or to reframe the search for new phenomena as an anomaly detection task. To this scope, several benchmark problems have been considered, and Deep Neural networks have been trained to perform the relevant tasks. Taking these problems and solutions as a baseline, this project aims at surveying quantum and quantum-inspired applications (e.g., quantum autoencoders, tensor networks, etc.) to create proof-of-principle applications that could be compared to the current state-of-the-art deep-learning based solutions.

**For more information about the CERN Doctoral Student Programme and to apply:**

<https://jobs.smartrecruiters.com/CERN/743999727905858-doctoral-student-programme>

When applying, please express your interest for the “CERN QTI position C: Unsupervised Learning on a Quantum Computer”.

Deadline for applications: **Wednesday 24 March 2021 at 12pm (CET)**