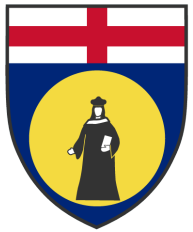

Università di Genova

BOOsting DIscoveries of New Interactions BOODINI

Spoke 2 Open Calls meeting
4th October 2024

Simone Marzani
Università di Genova

Project objectives and team

A - Jets from beauty and charm → A1 - Jet flavour algorithms

A - Jets from beauty and charm → A2 - Heavy Flavour jet substructure

B - Jets from the Higgs boson → B1 - Optimal discriminants from theory

B - Jets from the Higgs boson → B2 - High Lumi studies and pileup

C - Jets from New Physics → C1 - Multi-pronged jets

- We will pursue this objectives exploiting theoretical, experimental and computational techniques
- Simone Marzani (theory - 35%); Giovanni Ridolfi (theory - 10%)
  Federico Sforza (ATLAS - 35%); Fabrizio Parodi (ATLAS - 10%)
  + 1 postdoc (100%): recruitment done today!

Outcomes

- theory/pheno activities of A and B: one paper per objective (3 - 4 papers in total)
- computer program to perform phenomenology of heavy-flavour jet substructure (HF-JSS)
- development and study of classification algorithms for B (Hbb and Hcc) and C exploiting ML
- first theory results using Wasserstein distance (C)

Resources

- Theory calculations and the development of the computer program for HF-JSS will be done with local resources;
- Studies in HL-LHC or FCC scenarios require large samples (TB for 1M events) at NLO+PS that are CPU intensive (e.g. for 1 process Z+jet 700 core/day; we aim to do 5 processes);
- Multi-core CPU for ML studies