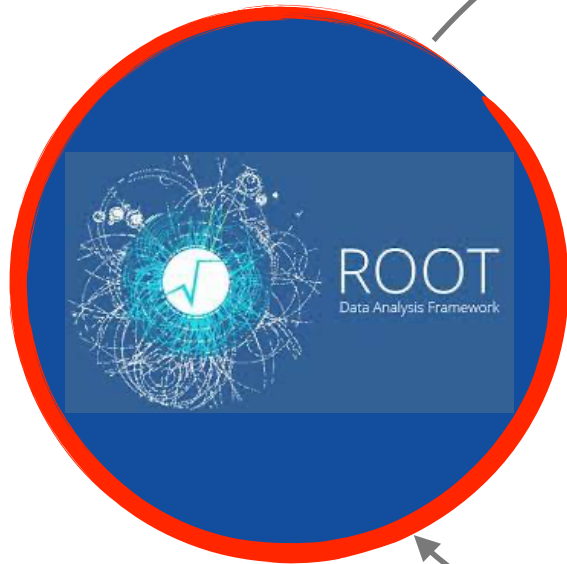
A large, stylized Python logo is centered in the background. It consists of two interlocking snakes, one light blue and one yellow, set against a dark blue background. The logo is semi-transparent, allowing the text to be seen through it.

# [ Python Tools in High Energy Physics ]

Rute Pedro, Maura Barros | 13th July 2022  
LIP Internship Program | Summer 2022

# This tutorial



## Python ecosystem

Jupyter notebooks

Machine Learning  
(scikit-learn, keras...)

pandas dataframes

matplotlib

# Introducing **Scikit-HEP**



- Ecosystem for Particle Physics data analysis in Python
- Provides core and common tools for the community
- Also improves the interoperability between HEP tools/data formats and Python

# Scikit-HEP Some tools

**VECTOR**

Manipulate Lorentz, 3D, and 2D vectors in NumPy, Numba, or Awkward.

**hepunits**

Units and constants in the HEP system of units.

 **particle**

PDG particle data and identification codes.

 **uproot**

ROOT I/O in pure Python and NumPy.

**mplhep**  


Plotting and styling helpers for matplotlib.

# Today's plan

- Repeat the ROOT basic tutorial exploring some of these packages
- Google colaboratory notebook [here](#)