Python for Astronomers and Particle Physicists

Wednesday 13 September 2017 - Friday 15 September 2017

Institute of Space Sciences

Programme

During the *Python for Astronomers and Particle Physicists* workshop we aim to cover the following topics:

Introduction to python

Basics
Integrated Development Environments (IDEs)
Python environments
Jupyter Notebook

Good Programming

Types
Classes
Tests
Version Control Systems - Git
PEP8 standard

Fundamental libraries

Working in arrays with Numpy
Plotting with Matplotlib / Seaborn
Table Handling with Pandas
Modelling and fitting with Scipy

Machine learning

Classification
Regression

Astronomy libraries

Units, FITS images, WCS and more with Astropy
Ephemerids with pyephem
Accessing online catalogues with Astroquery
Source detection and photometry with Photutils

Databases

Basic SQL operations
Integrating models with SQLAlchemy

Big Data

Working with very large sets of data on a Hadoop platform
Accessing big data with Hive and PyHive
Processing big data with Spark and PySpark