

# 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