# School on High Energy Particle &amp; Astroparticle Physics (HEPAP-DAS 2023)

**Tuesday, 5 December 2023 - Saturday, 9 December 2023**

**Saha Institute of Nuclear Physics**

# Scientific Programme

**Topics to be covered in Pre-School**

Introduction to Scientific Computing and computing environment.

Essential C++, Object-Oriented programming in C++, Generic Programming in C++ and the Standard Template Library (STL), Modern C++ (C++11 onwards).

Elementary Python, Python Data Structure, Functional, Programming with Python, Python Modules, Object Oriented Python.

Basic concepts of handling Root Files and Input/Output, Math Libraries, Histograms, Graphs, Tree based analysis, Basics of RooFit, Introduction to PyROOT/UpRoot.

Random Number Generator.

Git commands, software installation, etc.

**Topics to be covered in Main School**

A few pedagogical lectures on High energy Physics and Astroparticle Physics.

Statistical Methods for Data Analysis.

Introduction to Machine Learning Algorithms.

Hands-on Sessions on data analysis of simple problems
in High Energy Physics and Astroparticle Physics.