# 15th IDPASC Summer School



Monday, July 20, 2026 - Wednesday, July 29, 2026 Natal - RN

# **Program**

The 15th IDPASC Summer School offers a carefully curated program designed to provide participants with a comprehensive understanding of cutting-edge topics in Particle Physics, Astrophysics, and Cosmology (PASC).

## 20 July

### Registration

Welcome and Overview: IDPASC network

IDPASC network Bertrand Laforge / Nuno Castro

#### **Student Pitch Talks**

25 std X 5 minutes All Students

### **Discussion on Pitch Talks & Group Photo**

All Students + Lectures

#### **Welcome Cocktail (Ponta Negra)**

First round is on us.

## 21 July

#### Statistical Tools I

Uncertainties & Likelihoods

## **Python for Physics**

Basics & Data Handling

#### Statistical Tools II

Model Fitting & Significance

#### Hands-On

Python + ROOT for Data Analysis Lecturer and tutors

## 22 July

### **Particle Physics I**

The Standard Model

Lecturers: TBC

### Cosmology

The Early Universe

## **Particle Physics II:**

Beyond the Standard Model

Lecturers: TBC

### **Astroparticle Physics I**

Cosmic Rays & Neutrino Telescopes

#### **Dinner**

## **Challenges in Particles and Astroparticles Physics**

Public Panel of invited lecturers

## 23 July

## **Neutrino Physics**

Oscillations & Mass Hierarchy

Lecturer: TBC

## **Machine Learning I**

Fundamentals & Applications in HEP

## **Astroparticle Physics II**

**Experimental Projects** 

#### Hands-On

Intro to Machine Learning for Physics Data

**Tutors & Lecturers** 

## 24 July

### **Particle Physics III**

Collider Physics & Experimental Signatures

Lecturers:

**TBC** 

### **Machine Learning II**

Deep Learning for Event Classification

## **Experimental Techniques I**

**Detectors and Instrumentation** 

### **Hands-On Group Project Launch**

Group Data Challenge

**Tutors** 

## **Group Project Work**

Themes and composition.

**Tutors & Lecturers** 

## 25 July

Outreach - MasterClass: Hands-On Particle Physics

## Meeting of the IDPASC Committee

Executive Board meetings:

Annual Scientific Committee and Academic Council of the IDPASC network.

#### **Official Dinner**

## 26 July

Relax by the Beach

## 27 July

## **Heavy-Ion Collisions**

QGP & Extreme Conditions

Lecturer:

TBC

#### **Dark Matter I**

Theory & Candidates

#### **Dark Matter II**

Direct and Indirect Searches

### **Working Session**

**Group Project** 

**Tutors & Lecturers** 

## 28 July

## **Astrophysics I**

Stellar Evolution & Compact Objects

#### **Gravitational Waves**

Observations & Implications

## **Experimental Techniques II**

Trigger, DAQ & Analysis Chains

Lecturer:

**TBC** 

#### **Hands-On Session**

Accelerator Physics (Simulation Lab

**Tutors** 

## 29 July

## **Astrophysics II**

Cosmological Observables & Surveys

#### **Examination & Discussion**

All Students

## **Group Project Presentations**

Students Groups

### **Round Table**

Future of PASC Research & Career Paths

All lecturers