International Doctorate Network in Particle Physics, Astrophysics and Cosmology

IDPASC

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The International Doctorate Network in Particle Physics, Astrophysics and Cosmology (IDPASC) is an interdisciplinary network whose purpose is to create new high-level experts in the fields of Particle Physics, Astrophysics and Cosmology.

Courses (all)
- Physics at the LHC

Schools (all)
- IDPASC Neutrino School 2012
- Third IDPASC School 2013

Workshops (all)
- 1st IDPASC PhD Students Workshop
- New Worlds in Particle and Astroparticle Physics

Public Sessions (all)
- Higgs to be or not to be
- Dark Universe

Grants (all)
- Padova 2012
- FCT/IDPASC 2012
Particle Physics:
“Matter” and Interactions

Cosmology:
Origin and evolution of the Universe

Astronomy/astrophysics:
“Objects” in the sky
The network:

- PhD Students: 115
- Researchers: 164
- Countries of origin: 19
Activities

• Schools and Workshops
  ✓ A general IDPASC school every year
    (2 weeks: mornings lectures/afternoon exercises/exam at the end)
  ✓ Thematic schools

• Courses
  ✓ Specific courses via video-conference

• Public sessions
  ✓ General public (in particular last years high school students and teachers)

• Doctoral Scholarships
  ✓ 2010/2011/2012 FCT/IDPASC call – 21 grants
  ✓ 2014 FCT PhD program call – ”IDPASC-Portugal”
  ✓ EJD H2020 call - “IDPASC: instrumentation and technologies”
IDPASC Posters ...
Dark matter searches

Indirect detection
- Annihilation: $\chi \rightarrow q, e^-, \gamma$
- Production: Particle colliders

Direct detection
- Scattering: nuclear recoils
- Example: Zeplin III
Neutrinos

BBN

Neutrino Reactions on Deuterium

Charged-Current

IceCube

South Pole Neutrino Observatory

GERDA

GERDA Neutrino Observatory for the Neutrinoless Double

\[ \sum_{\nu_i} \theta_{ij} \nu_i > 10^{15} \text{eV} \]
Not really a super Man/Woman ...

BUT !!!
Baryon-antiBaryon asymmetry

Lorentz Invariance Violation

Gravitational waves

Extra-dimensions

Dark Energy
Purpose

The International Doctorate Network in Particle Physics, Astrophysics and Cosmology (IDPASC) is an interdisciplinary network whose purpose is to create new high-level experts in the fields of Particle Physics, Astrophysics and Cosmology.

The doctorate network in particle physics, astrophysics and cosmology will appear in the overall range of doctorates offered by each partner university.
Student profiles

Several scientific profiles have to co-exist! from the experimental physics students interested in the development of new detectors or data acquisition and readout systems to the theoretical physics student interested in the development of string theories.

to all students a minimum common scientific background should be provided.

This common background will favour the future mobility and employment of the students either in scientific research projects and institutions or in the society at large.
**2010/2011/2012**

**Call FCT/IDPASC for Applications for Doctoral Scholarships**

for thesis subjects proposed by IDPASC researchers and taking place in the Portuguese Universities members of the IDPASC network, in Particle and Astroparticle Physics, Astrophysics and Cosmology.

**PhD scholarships granted: 21**