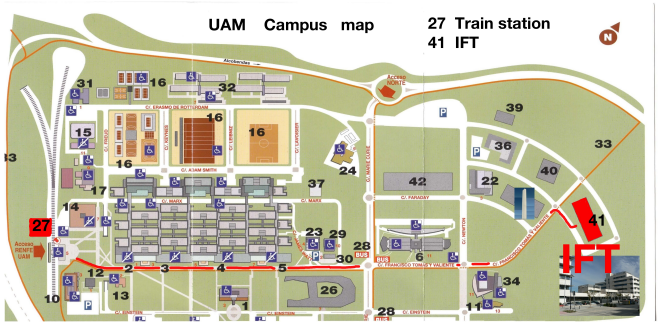
Acknowledgements

The IFT activities would not be possible without the support of its host institutions: CSIC and UAM.

We also thank the public institutions supporting most of the IFT scientific activity: Spain Ministry of Economy and Competitiveness, Ministry of Education, Culture and Sport, Comunidad de Madrid, and the European Union.

Location: The IFT is located on the UAM Campus, in the building hosting the Centre for Theoretical Physics and Mathematics.



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Institute for Theoretical Physics
Instituto de Física Teórica
UAM-CSIC

What is the IFT?

The Institute for Theoretical Physics (IFT) is a joint research centre belonging to the Spanish National Research Council (CSIC) and the Autonomous University of Madrid (UAM). The IFT started in 1994 when several well established research teams from UAM and CSIC decided to join efforts to generate synergies and power up their international impact in the field. The official recognition of the IFT was officially awarded in 2003.

What are its goals?

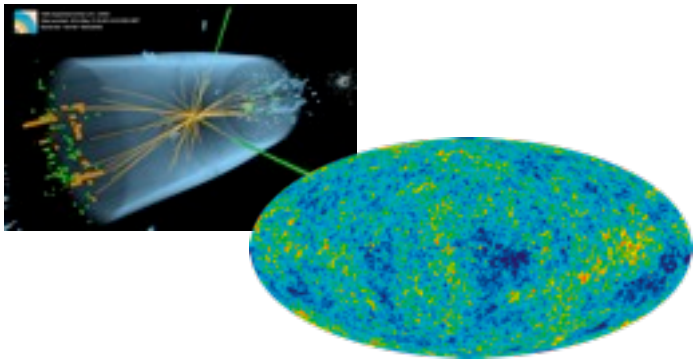
- The main aim of the IFT is to promote scientific research of excellence in the field of Theoretical Physics.
- The IFT also gives special importance to training of young researchers and professionals.
- The IFT supports an intense knowledge transfer to society through diverse outreach activities.

What are its key features?

- The IFT is the only Spanish centre dedicated entirely to research in Theoretical Physics. Its members lead many research projects, both at the national and international level.
- The IFT is credited as Severo Ochoa Centre of Excellence since 2012. It is also part of the strategic line `Theoretical Physics and Mathematics´ of the Campus of International Excellence (CEI) UAM+CSIC"
- The IFT is an international centre, with a welcoming attitude towards members and visitors from any country, with the only criterion of scientific excellence.
- The IFT goes beyond the union of several research groups and departments. Most of the IFT activities encourage the joint participation of its scientists in all the IFT research lines.
- The IFT hosts a postgraduate program in Theoretical Physics, with a mention of excellence from the CEI and the Ministry of Education.
- The IFT grants special importance to the dissemination of its scientific results, through the organization of specialized conferences and workshops, as well as outreach activities for the general public.

Research at the IFT

The IFT members develop research in the frontiers of Elementary Particle Physics, Astroparticles and Cosmology, in order to understand the fundamental keys of Nature and the Universe.



Some of the fundamental questions addressed by the research of the IFT members are:

What are the properties of the recently discovered Higgs boson?

Are there other elementary particle, such as those predicted by supersymmetry, at the even higher energy regime to be experimentally accessed in the next few years?

Are all elementary forces, including gravity, unified as suggested by string theory?

What is the natures of the dark matter and dark energy that dominate the Universe expansion?

What is the origin of neutrino masses, and why are they so small?

Why is the Universe made out of matter, and no antimatter?

What are the properties of quantum particles at strong coupling?

Are there other spacetime dimensions, beyond those we know of?

This research is both fascinating and timely. New experiments, like the LHC collider at CERN, the DES and BOSS telescopes measuring dark energy, or the underground dark matter detector superCDMS, are about to provide new data, essential to answer these and other questions. The IFT is ready to play a relevant role in this 21st century physics quest.

Activities and outreach

The IFT constantly encourages, supports and hosts a large number of scientific meeting attracting renowned researchers worldwide. It also carries out numerous outreach activities.

- Every year the IFT hosts several international conferences and workshops on topics ranging from the results of the LHC collider at CERN to the nature of dark matter and dark energy in the Universe.
- Each December it hosts a new edition of the IFT Christmas Workshop. This meeting, which started out in1995, encompasses all the research areas at the IFT. Its speakers are international leading experts in the field, and have included several Nobel prizes.
- The IFT organizes several extended topical research programs, bringing together the main international scientists in high impact and timely research areas.
- The IFT carries out an intense scientific outreach program, with several activities for High School teachers and students (visits, International Hands-on Particle Physics Masterclass, High School Teacher programs), as well as for the general public (audiovisual material, videos, books, colloquia, and activities with the Madrid Science Week.