

Friday 5

09:30 h | Gravitational waves Electromagnetic counterparts

Alberto J. Castro-Tirado

10:30 h | Dark Matter

David García Cerdeño

Investigador

Institute for Particle Physics Phenomenology

Durham University

12:00 h | Closing Session

Alicia Sintés

Afternoon Sessions:

IFCA-Facultd de Ciencias

Universidad de Cantabria

The subject of the “International School of Particle Physics and Cosmology” includes those areas of study aimed at the understanding of the fundamental structure of the universe and its dynamics, from the smallest objects, governed by relativistic quantum field theories, to the largest, under the laws of general relativity.

The first edition of the school, this year 2019, is dedicated to the investigation of the universe with a new instrument, the “gravitational waves”. Thus, the title of the present edition is: “New windows to the universe: Gravitational waves and multi-messengers”. The advent of gravitational wave detectors, neutrino telescopes and the latest instruments in electromagnetic channels is increasing dramatically our power to extract information from the Universe at large. In the process, we expect to advance our understanding of fundamental questions, ranging from the structure of the Big Bang to the ultimate fate of the Universe, and the physics of its most extreme objects, such as black holes. The school will provide an up to date view of experiments and theory in this multidisciplinary area of research, and should appeal to students and early researchers interested in particle physics, gravitation, cosmology and astrophysics.

The programme includes morning lectures followed by afternoon practices' sessions. The profile of the potential interested student is relatively broad; includes graduate students working towards a PhD, master students and latter-year undergraduates.



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INFORMACIÓN GENERAL

Hasta el 14 de junio de 2019

Santander

Campus de Las Llamas
Avda. de los Castros, 42
39005 Santander
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Madrid

C/ Isaac Peral, 23
28040 Madrid
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A partir del 17 de junio de 2019

Santander

Palacio de la Magdalena
39005 Santander
Tel. 942 29 88 00 / 942 29 88 10

alumnos@uimp.es

PLAZOS

Solicitud de becas

Hasta el día 27 de mayo,
para los cursos que comiencen
antes del 5 de julio de 2019

Hasta el día 14 de junio,
para los cursos que comiencen a
partir del 8 de julio de 2019

Apertura de matrícula

Desde el 6 de mayo de 2019
(plazas limitadas)

Horario general

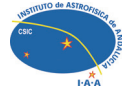
de 9:00 a 14:00 h
de 16:00 a 18:00 h
(excepto viernes)

Código 64B0 / Tarifa: C / ECTS: 1

Organizado en colaboración con:



Colaboración:



UIMP
Universidad Internacional
Menéndez Pelayo

SANTANDER 2019

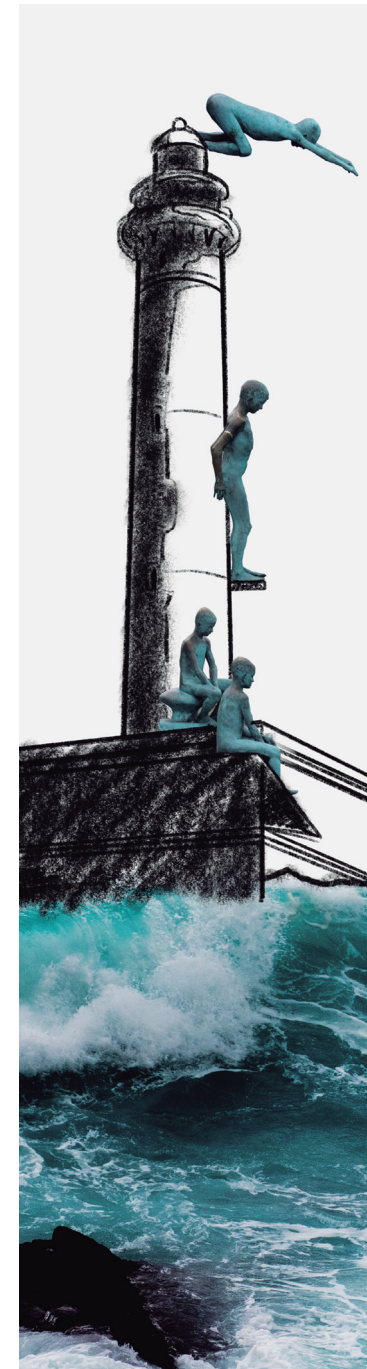
I INTERNATIONAL
SCHOOL ON PARTICLE
PHYSICS AND
COSMOLOGY

New windows
to the Universe:
gravitational
waves and
multi-messengers

Teresa Rodrigo
Alberto J. Castro-Tirado

1 - 5 July

www.uimp.es



700-19-002-3

SANTANDER, 2019 Programa académico

I INTERNATIONAL SCHOOL ON PARTICLE PHYSICS AND COSMOLOGY

New windows to the Universe: gravitational waves and multi-messengers

Directors

[Teresa Rodrigo](#)

Catedrática de Física Atómica

Directora del Instituto de Física de Cantabria (CSIC-UC)

[Alberto J. Castro-Tirado](#)

Instituto de Astrofísica de Andalucía

1 -5 July

Monday 1

10:00 h | Introduction to the first edition of the school

[Teresa Rodrigo](#)

[Alberto J. Castro-Tirado](#)

10:45 h | Particle Physics-Overview

[Alberto Casas](#)

Profesor de Investigación

Instituto de Física Teórica (IFT-UAM/CSIC)

12:00 h | An overview on Astroparticles

[Enrique Zas](#)

Catedrático de Física

Universidad de Santiago de Compostela

12:45 h | Cosmology

[Juan García-Bellido](#)

Catedrático de Física Teórica

Universidad Autónoma de Madrid

Investigador del Instituto de Física Teórica, CSIC

15:30 h | Multimedia exercises: Introductory
documentaries on High Energy and Neutrino Astrophysics

[María Teresa Ceballos](#)

Científica Titular

Instituto de Física de Cantabria (CSIC-UC)

[Francisco Carrera](#)

Catedrático de Universidad

Instituto de Física de Cantabria (CSIC-UC)

Tuesday 2

09:30 h | An overview from CMB

[Patricio Vielva](#)

Científico Titular

Instituto de Física de Cantabria (CSIC-UC)

10:30 h | Gamma Rays

[Elena Moretti](#)

Investigadora

Institut de Física d'Altes Energies (IFAE)

12:00 h | Cosmic rays

[Antonio Bueno Villar](#)

Catedrático de Universidad

Departamento de Física Teórica y del Cosmos

Facultad de Ciencias, Universidad de Granada

12:45 h | Neutrino Telescopes

[Juan José Hernández-Rey](#)

Director del Instituto de Física Corpuscular (IFIC, CSIC)

Universidad de Valencia

15:30 h | Multimedia exercises: Introduction
to Gravitational Waves event analysis

[Sascha Husa](#)

Profesor asociado de Física Teórica

Universidad de las Islas Baleares

[Gervasio Gómez](#)

Científico Titular

Instituto de Física de Cantabria (CSIC-UC)

[Alicia Sintes](#)

Profesora Titular de Universidad

Universidad de las Islas Baleares

Wednesday 3

09:30 h | General relativity & sources of gravitational waves

[Sascha Husa](#)

10:30 h | Detection of gravitational waves:
LIGO and VIRGO

[Gabriela González](#)

Professor of Physics

Louisiana State University

12:00 h | Gravitational waves data analysis

[Alicia Sintes](#)

12:45 h | LISA mission

[Carlos Fernández Sopena](#)

Científico Titular

Instituto de Ciencias del Espacio (ICE, CSIC)

15:30 h | Multimedia exercises: Gravitational waves
event analysis (LIGO data)

[Sascha Husa](#)

[Alicia Sintes](#)

[Gervasio Gómez](#)

Thursday 4

09:30 h | Quantum gravity & applications to Black Holes
and Cosmology

[Jorge Pullin](#)

Horace Hearne in Theoretical Physics

Louisiana State University

10:30 h | Black Holes/EHT

[José Luis Gómez](#)

Investigador

Instituto de Astrofísica de Andalucía - CSIC

12:00 h | Multi-messengers & the future on the Universe

[Gabriela González](#)

12:45 h | Electromagnetic signals from heavy elements
nucleosynthesis

[Gabriel Martínez-Pinedo](#)

Investigador

Institut für Kernphysik Technische Universität Darmstadt

15:30 h | Multimedia exercises: Detectability of
gravitational waves with microwave data

[Alberto J. Castro-Tirado](#)

[Diego Herranz](#)

Profesor titular. Universidad de Cantabria

[Patricio Vielva](#)