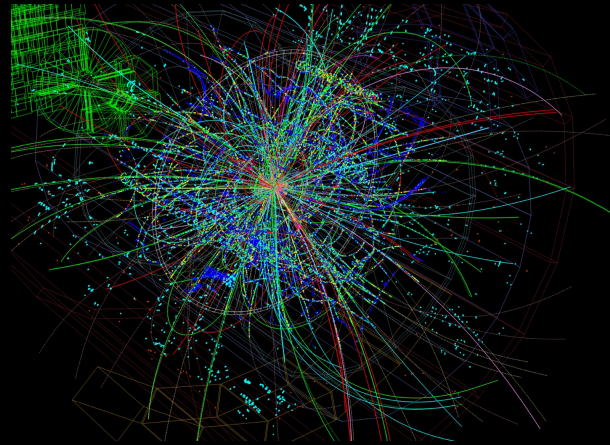
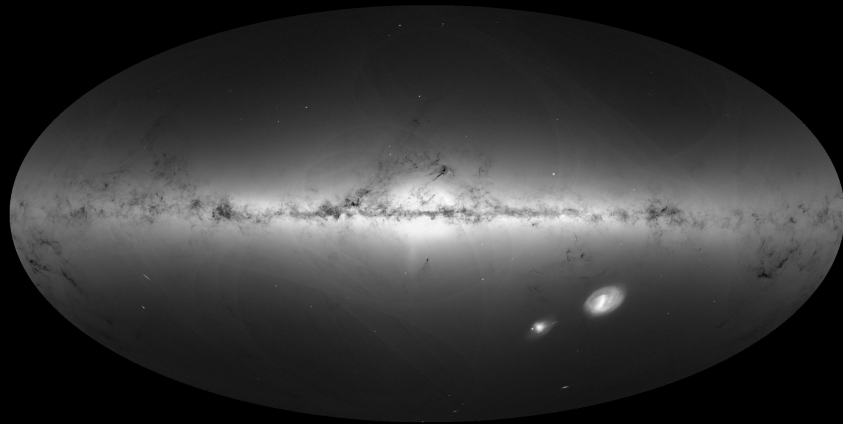


Sessió informativa  
del  
**Màster en Astrofísica, Física de Partícules i Cosmologia**

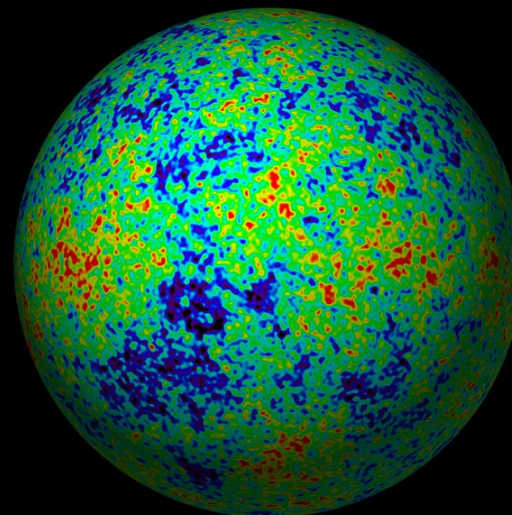
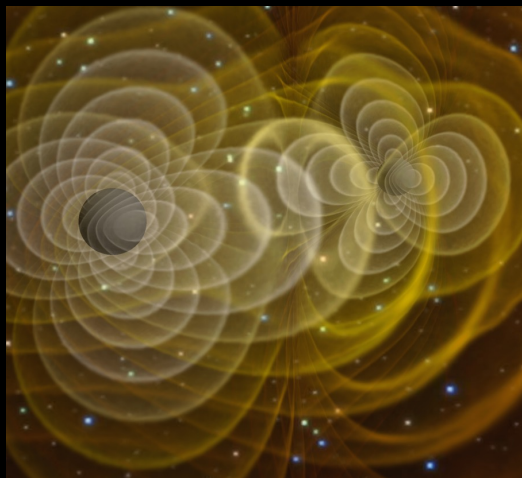


Presentat per:

Josep Maria Solanes  
Coordinador del màster

Dimarts, 11 d'abril de 2023  
Sala de graus Eduard Fontseré

*Màster amb beques de:*



# THE ICCUB IS AT THE HEART OF THE MAPFiC

Created in 2006 as the instrument of the University of Barcelona for the active support of research in theoretical and observational astrophysics and particle physics, paying special attention to their synergy with cosmology, and also to promote experimental physics and instrument development.

Chosen in 2015 as 'María de Maeztu Center of Excellence' by the Spanish Government for the international impact of its scientific contributions, its innovative power and its strong relationship with the social and economic environment. **4-year award renewed in 2020!**



EXCELENCIA  
MARÍA  
DE MAEZTU

# Seal of excellence from AQU Catalunya

This seal certifies that our program has completed the process of accreditation successfully with the overall qualification of "accreditation with excellence", since it has complied to a high level with most of the established criteria and with numerous good practices that exceed the required minimum.

Valid until: January 21, 2025



AQU Catalunya està inscrita a EQAR

# Some statistics about the master's degree

- About 100 pre-admission requests each year; ~50-60 are solved favorably.
- About 25 \*new\* students (65% PG/35% AE) enroll each year.
- About 80% of students complete the degree in one academic year; average length of studies: ~1.1 yr/student.
- Previous studies: Physics, Mathematics, Engineering (diversity of fields), Economics...
- Career opportunities: mostly doctoral studies. Yet, we also offer specialised training for people who wishes to work in the private sector (e.g. research divisions of companies), teaching, etc o that simply desires to extend one's knowledge.

# Structure of the degree

Two branches of study:

- **Astrophysics and Space Sciences** (studies the macrocosmos, i.e., the different astronomical objects and their associated physics).
- **Particle Physics and Gravitation** (studies the microcosmos, i.e., the structure of matter and their fundamental interactions).

It is possible to design an interdisciplinary curriculum by selecting subjects of both specialties. Best if done with the master thesis (TFM).

# Calendar and timetable

- The standard master **program** is **divided in two** terms or **semesters** that run from September to January (Fall term) and from February to June (Spring term). **Enrollment takes place between July-September only.**
- **In-class subjects taught from Monday to Thursday in 60-min sessions.**
- **Full-time dedication is 60 ECTS/year arranged on two semesters**
  - Fall term: 4 in-class subjects (24 ECTS);
  - Spring term: 2 in-class subjects (12 ECTS) + TFM (24 ECTS).
- **Part-time dedication requires a minimum of 18 ECTS/year.**

# Distribution of ECTS

The 60 credits of the master\* must be obtained from:

- 12 ECTS in two six-monthly mandatory common subjects ('Advanced Cosmology' and 'Mathematical and Statistical Techniques').
- 12 ECTS in six-monthly mandatory specialty subjects.
- 12 ECTS in six-monthly elective subjects.
- 24 ECTS in the mandatory Final Master Project (TFM), an introductory research project one semester long. **Offered in Fall and Spring.**

**All regular master's subjects are taught in English**

(\* ) Some students are recommended to take extra formative complements (max. 12 ECTS of undergraduate Physics' courses); taught in Catalan and/or Spanish.

# List of study areas and subjects

<b>1. Cosmologia</b>	<b>Obligatòria (6 ECTS)</b>
<a href="#">Cosmologia avançada</a>	6 ECTS
<b>2. Tècniques matemàtiques i estadístiques</b>	<b>Obligatòria (6 ECTS)</b>
<a href="#">Tècniques matemàtiques i estadístiques</a>	6 ECTS
<b>3. Astrofísica estel·lar i galàctica</b>	<b>Optativa (12 ECTS)</b> <b>Obligatòria per a l'especialitat d'astrofísica i ciències de l'espai</b>
<a href="#">Estructura i formació estel·lar</a>	6 ECTS
<a href="#">Astronomia galàctica</a>	6 ECTS
<b>4. Física d'altres energies</b>	<b>Optativa (12 ECTS)</b> <b>Obligatòria per a l'especialitat de física de partícules i gravitació</b>
<a href="#">Teoria quàntica de camps</a>	6 ECTS
<a href="#">Partícules elementals</a>	6 ECTS
<b>5. Tècniques d'observació i experimentació</b>	<b>Optativa (12 ECTS)</b>
<a href="#">Instrumentació, anàlisi de dades i aprenentatge automàtic</a>	6 ECTS
Tutoria I (suspesa temporalment)	3 ECTS
Tutoria II (suspesa temporalment)	3 ECTS
<b>6. Astrofísica avançada</b>	<b>Optativa (12 ECTS)</b>
<a href="#">Astrofísica extragalàctica i formació de galàxies</a>	6 ECTS
<a href="#">Astrofísica d'altres energies</a>	3 ECTS
<a href="#">Astronomia des de l'espai</a>	3 ECTS
<b>7. Física de partícules i gravitació avançades</b>	<b>Optativa (18 ECTS)</b>
<a href="#">Relativitat general avançada</a>	6 ECTS
<a href="#">Teories de gauge del model estàndard</a>	6 ECTS
<a href="#">Fronteres de la física teòrica</a>	6 ECTS
<b>8. Treball de final de màster</b>	<b>Obligatòria (24 ECTS)</b>
<a href="#">Treball de final de màster</a>	24 ECTS



# Fees and tuition grants

- The enrolment fees for official master's degrees are established by the Generalitat de Catalunya. **In the 2022-2023 academic course the fees at the public Catalan universities were 27.67 Eur./ECTS** for national students from EU member states, as well as for students holding residence permits in Spain lasting not less than one year. For the rest of the students the fees per ECTS were 82 Eur./ECTS. **There is also a pre-enrolment fee of 30.21 Eur.**
- Current main grant provider is the Institute of Cosmos Sciences (ICCUB) with funds from the MdM award. **ICCUB scholarships are in the form of tuition waivers.** In the last two academic years we have been offering **4 full-tuition and 5 half-tuition scholarships each year.**
- **Other grant sources: beques Master+UB,** University of Barcelona's collaboration grants, Catalunya-La Pedrera grants, Spanish Ministry of Education general grants, bkUB special grants, La Caixa,... Ask the ICCUB's Office (5th floor, old building).

Do not forget to check the ICCUB's website

[https://icc.ub.edu/master\\_afpc/](https://icc.ub.edu/master_afpc/)

for master thesis proposals, subjects' schedules, TFM deadlines, grant information, contact details of staff and lecturers, etc.