

Gravity and compact objects group

IPARCOS Scientific Advisory Board: Bi-Annual Review 2026



Group's Overview

Group Snapshot

- **Group Name & Principal Investigator (PI):** Gravity group (Antonio Dobado)
- **Current Size:** Total members: 7 staff (José Luis Blazquez-Salcedo, Antonio Dobado, Luis Manuel Gonzalez Romero, Rafael Hernández Redondo, Francisco Navarro, Carmelo Pérez, Diego Rubiera-Garcia), 1 post-doc Fech (Scen Khoo), 3 PhD students (Advisors: JLB, FSK, DRG)
- **Key Personnel Changes:** Arrivals 1 postdoc, 3 PhDs; Departures: 1 postdoc.

Key Performance Indicators

- **High-Impact Publications:** 46 peer-reviewed papers – 42 in Q1 journals)
- **Funding Secured:** PID2023-149834NB-I00 (RHR, Plan Nacional): 16.000 EUR; CNS2023-144089 (JLB, Plan Nacional), 49,460 EUR; CNS2024-154444 (DRG, Plan Nacional): 87.567 EUR; Atracción de Talento Investigador (CAM): 420.000 EUR
- **Training:** No Thesis defended in the last two years.

NOTE: (Last two years only, ~from 2024 on)



Group's Overview

Top Scientific Highlights

- **Highlight 1:** Finding of new alternative black holes and horizonless compact objects under different prescriptions.
- **Highlight 2:** Development of new methods for the calculation of quasinormal modes of rotating black holes and wormholes
- **Highlight 3:** Development of scenarios and codes for testing alternative compact objects in time-averaged disk images

Leadership, Internationalization & Impact

- **Major Roles:**
 - Writers of 2505.23895 [gr-qc] on black hole spectroscopy (JLB, FSK), corollary of "Ringdown Inside and Out" Meeting; over 220 citations.
 - Editor and autor of CosmoVerse COST White Paper (DRG), 2504.01699 [astro-ph.CO], over 460 citations
 - Writers of Einstein Telescope White Paper (JLB, DRG), 2503.12263 [gr-qc], over 370 citations.
 - Organization of QG-MM Annual COST Meeting (DRG) at UCM, 2024.
- **Recognitions:** 7 plenary talks at international meetings, including Marcel Grossman meeting
- **Tech Transfer / Outreach:** Outreach book chapter (DRG); code publication at Wolfram Research.

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Group's Overview

The Horizon

- **Next Big Milestones:**

- Development of new methods for the calculation of quasinormal modes of rotating compact objects in alternative theories of gravity
- Unification of time-averaged images and transient observations in stationary and dynamical space-times
- Search for signals of new compact objects/new physics
- Prospects for combined observations of gravitational waves and shadows in future technological upgrades

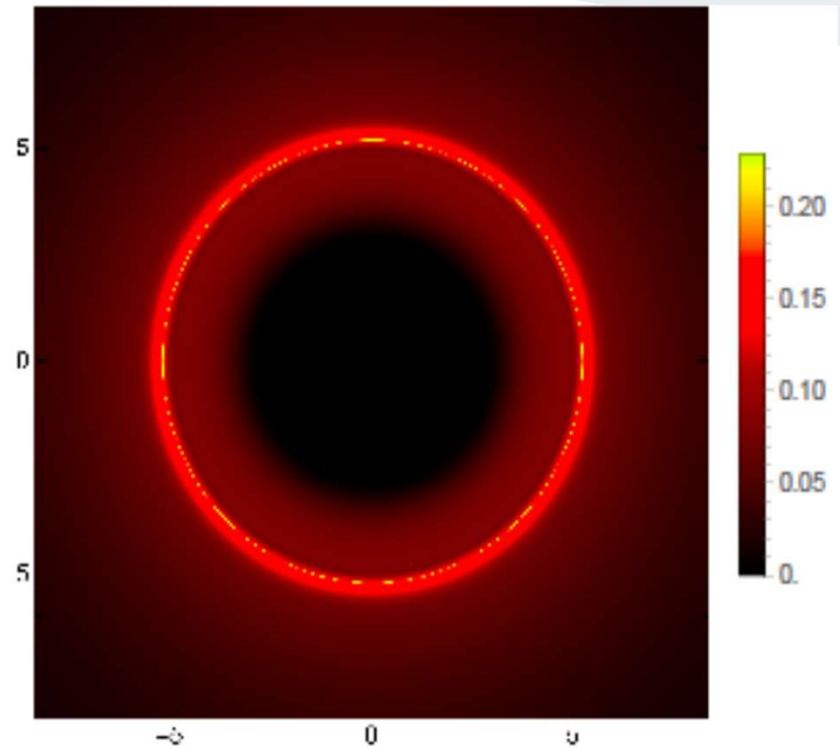
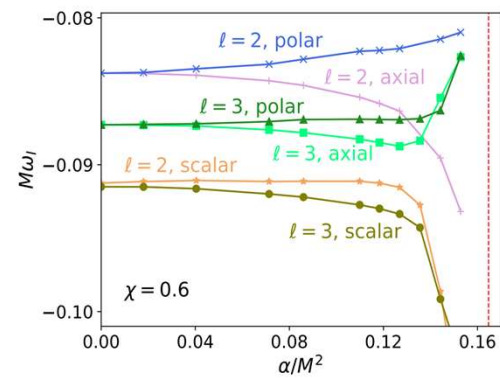
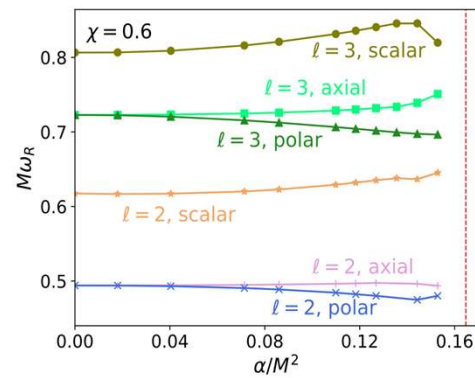
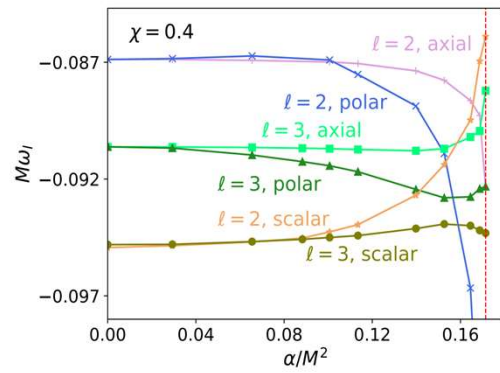
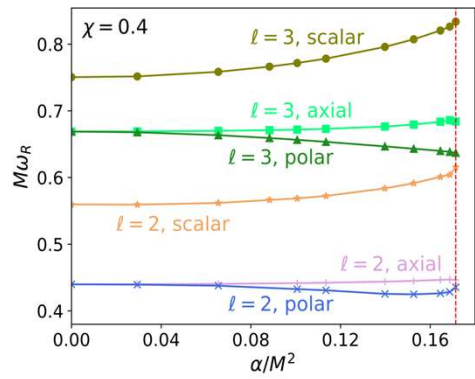
- **Funding:**

- Application to the new round of National Projects for year 2027
- Elaboration of a proposal for the ERC Advanced Grant for year 2027 (2028?) – astrophysical phenomenology of fundamental physics -

NOTE: (Last two years only, ~from 2024 on)



hearing...



... vs seeing



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Thanks for your attention!