



Markos Polkas

Master of Science with expertise in Astrophysics

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Born 20 September 1996

Markos Polkas

EDUCATION

September 2021 – Present

PhD in Physics

Donostia International Physics Center and University of Vasque Country *San Sebastian, Spain*

title: Black hole formation and evolution in models of galaxy formation

Supervisor: Silvia Bonoli

October 2018 – October 2020

Master's degree in Physics

Department of Physics, *National Kapodistrian University of Athens*

- Specialization in Astrophysics

- Completed Courses: Cumulative Grade Point Average 9.33/10.00

- Graduate Diploma Thesis: "*Theoretical Study of Time-varying Multiwavelength Emission of Jets of Active Galaxies and Application at Observations*"

Supervisor: Prof. Apostolos Mastichiadis (National Kapodistrian University of Athens), Dr. Maria Petropoulou (Princeton University), Dr. George Vasilopoulos (Yale University)

October 2014 – October 2018

Bachelor's degree in Physics

Department of Physics, *National Kapodistrian University of Athens*

- Cumulative Grade Point Average 8.32/10.00

- Specialized in Astrophysics and Astronomy (Last 1.5 years)

- Undergraduate Diploma Thesis: "*Synchrotron Self-Absorption in Blazars*"

Supervisor: Professor Apostolos Mastichiadis

CONTRIBUTIONS

as of August 2024

Publications (of which first author)

3(2) journal article, 3(2) in proceedings, 5 in preperation (3); ADS

September 2024

Tidal Disruption Events and Nuclear Transients

Demographics of Tidal Disruption Events with semi-analytic models of galaxy formation
Heraklion, *Crete, Greece*

August 2024

UoB Colloquium

Demographics of Tidal Disruption Events with L-Galaxies-BH Is massive black hole growth from stars a thing?

UoB, *Birmingham, England*

June 2024

Clouds, Star Clusters and Black Holes 2024

All-star Massive Black Holes: Tidal Disruption Events and star-fed growth

Alpbach, *Alpbach, Austria*

January 2024

L-Galaxies Meeting 2024

Explaining Tidal disruption event rates with L-Galaxies-BH

DIPC, *Donostia/San Sebastian, Spain*

- December 2023* **Black Holes on Broadway**
Tidal disruption events used for constraining seeding scenarios
Simon Foundation, *New York, USA*
- November 2023* **DIPC-ICE collaboration meeting 2023**
Tidal disruption events in a cosmological context: the role of Nuclear Star Clusters and massive black hole growth (seminar on TDEs at ICE)
ICE-CSIS, *Barcelona, Spain*
- July 2023* **European Astronomical Society Conference 2023**
TDE and where to find them; realistic rates of Tidal Disruption Events with semi-analytical model of galaxy-evolution (Contributed talk)
Quasi-Periodic Oscillations as probes of circumbinary disks of the most massive SMBH binaries (poster)
Nuclear Star Clusters as Black Hole hosts in L-Galaxies-BH semi-analytic model of galaxy evolution (Contributed talk)
ICE, *Krakow, Poland*
Visit at Max-Planck for Extraterrestrial Science 2023
Tidal disruption events with L-Galaxies-BH (invited talk for the e-ROSITA group)
MPE, *Munich, Germany*
- June 2023* **Transient Universe 2023**
Tidal disruption events with L-Galaxies-BH (talk)
Carguense Center of Astrophysics, *Corsica, France*
- May 2023* **L-Galaxies seminar series**
massive black holes with L-Galaxies-BH: application tidal disruption events (talk)
online
- January 2023* **BH Slippery Slope 2023**
Early growth of massive black holes due to capture and disruption of stars (talk)
Sesto, Italy
- October 2022* **Young AGN**
Quasi-Periodic Oscillations as probes of circumbinary disks of the most massive SMBH binaries (5 min talk)
DIPC, *Donostia/San-Sebastian, Spain*
- October 2022* **L-Galaxies Workshop**
Tidal Disruption events in L-Galaxies (talk)
Hertfordshire, London, England
- July 2021* **International Cosmic Ray Conference**
Poster; Modelling blazar variability with leptonic models
MPIA Heidelberg, *online*
- June 2021* **Hellenic Astronomical Society Meeting**
Poster; Bayesian SED fitting with Markov Chain Monte Carlo
15th HelAS Conference, *online*
- SCHOOLS**
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- June 2023* **Transient Universe 2023**
Carguense Center of Astrophysics, *Corsica, France*
- February 2020* **JWST Master Class Workshop**
NKUA & IA - FORTH, *Athens, Greece*

January 2020 **COST WG1 Milky Way Gaia School**
ICCUB -IEEC, Barcelona, Spain

June 2019 **Summer School for Astrostatistics in Crete**
University of Crete, Crete, Greece

WORK AND OTHER RELEVANT EXPERIENCE

as of August 2024

Co-supervisorship

Daniel Gardenas Argunov (Master's student, Universidad Complutense de Madrid 2024);
The properties of halos hosting JWST galaxies
George Mathioudakis (Bachelor student, University of Athens 2020), Physical Mechanisms powering Fast Radio Bursts

October 2020 – February 2021

Teaching Assistant in National Kapodistrian University of Athens

Volunteering in offering complimentary courses on High Energy Astrophysics under the supervision of A. Mastichiadis & M. Petropoulou
Help in developing material for course on extragalactic astronomy

December 2020 – October 2021

Research Associate in National Observatory of Athens

Data analysis and training on software tools under the supervision of Kalliopi Dasyra on the project with title: «Do massive winds induced by black hole jets alter galaxy evolution? Evidence from the ALMA Radio Source Catalog (ARC)»

- Experience in Hubble Space Telescope Phase 1, use of APT (74 orbits) (P.I. Kalliopi Dasyra): "Follow-up of CO-ARC sample of 120 radio galaxies, very successful in detecting or constraining their H₂ gas masses"
- SED-fitting (CIGALE + radio jet fit) and prediction of flux (P.I. Françoise Combes): "Mrk3: a prototypical case of jet-ISM interaction"

PUBLIC OUTREACH AND OTHER EXPERIENCE

September 2021-

Contributions in online journal 2'science (Greek Language)

<https://2science.gr/questions/magnetic-files/> <https://2science.gr/nuclear-star-clusters/>

March 2024

Public Talk

CFM-DIPC PhD-seminar Series; The diet of Massive Black Holes

June 2023

Public Outreach

Palo de Eratosthenes; talk with an astrophysicist (in Spanish)

October 2018 – January 2019

Trainee Museum Guide at *National Observatory of Athens*

Part-time activity, offering opportunity for public outreach

October 2019

Public Outreach

Space Week 2019; Zooniverse workshop at University of Athens

June 2014 – August 2014

International Olympiad Of Astronomy and Astrophysics

Participation in 8th IOAA – Suceava, Romania

- Distinction in National Competition
- 2 week preparation on undergraduate level Astrophysics, Data Analysis and Observational Methods

SKILLS

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|--------------------|---|
| Programming | Programming Languages <ul style="list-style-type: none"> • Bash/awk • C (familiar with C++) • Fortran—77 • Matlab • Python [Best Preference] • Julia (not applied) |
| | Software <ul style="list-style-type: none"> • Linux, Windows • \LaTeX • Microsoft Office (Cambridge ECDL) • Familiar with software used on Astrophysics/Astronomy: Athena++, CIGALE, PLUTO, PKDGRAV3 [Dark Matter Simulations], Mathematica, L-Galaxies, SSDC Tools, Astronomer's Proposal Tool (APT) |
| Languages | English <ul style="list-style-type: none"> • Proficiency in English, C2 Michigan • TOEFL iBT (November 2018) |
| | Spanish <ul style="list-style-type: none"> • Level B1 (speaking fluently) |

ADDITIONAL INFORMATION

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| Scientific Interests | High Energy Astrophysics: Active Galactic Nuclei, Relativistic Jets, Tidal Disruption Events. Extragalactic Astronomy Extragalactic Astronomy & Cosmology: semi-analytics models of galaxy formation, N-Body Simulations, supermassive black hole formation and evolution |
| Interests | Amateur Astronomy, Swimming, Cycling, Football, Philosophy and Classic Literature |