



# George Alestas

Physicist - PhD Candidate 

## Affiliation

University of Ioannina

## Website

[georgealestas.github.io](https://georgealestas.github.io)

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## Languages

Greek → Native  
English → Fluent

## Professional Summary

A highly motivated researcher specializing in Cosmology and Astrophysics. I am proficient in the theoretical and numerical exploration of cosmological models, including cosmological parameter inference using various well-known MCMC software. I have worked on several aspects of the Hubble and  $S_8$  tensions. Part of the Snowmass - Cosmology Intertwined collaboration. I would describe myself as a fast learner and an excellent collaborator.

## Education

- 2018 - 2022 **PhD Candidate** University of Ioannina  
*PhD Thesis:* "ΛCDM and the Implications of the Hubble Tension"  
*Advisor:* Prof. Leandros Perivolaropoulos
- 2015 - 2017 **MSc in Theoretical Physics** University of Patras  
Upper First Class Honours, GPA was 8.87.  
*MSc Thesis:* "Thermodynamic Properties of Self-Gravitating Systems", grade: 10/10
- 2010 - 2014 **BSc in Physics** University of Patras  
Upper Second Class Honours, top 4 percent of my class. My specialization was Theoretical and Mathematical Physics, Astronomy and Astrophysics. Specialization courses GPA was 8,36.  
*BSc Thesis:* "Cosmological Perturbation Theory and Gravitational Waves", grade: 10/10, Indicative Courses and grades:  
1. Astrophysics I: 8/10  
2. Astrophysics II: 8.5/10  
3. Computational Physics : 9.5/10  
4. Elementary Particles and Cosmology: 8/10

## Publication Record

Eight papers (highlighted most important) with a total of more than 170 citations and h-index = 7 and two articles published in conference proceedings. The codes used in the analysis of all the papers are publicly available at my **GitHub** page. Click **here** for my up to date InspireHEP profile.

1. **Constraining a late time transition of  $G_{\text{eff}}$  using low- $z$  galaxy survey data**, G. Alestas, L. Perivolaropoulos and K. Tanidis, arXiv: 2201.05846 (Under peer-review)
2. **Late-transition vs smooth  $H(z)$  deformation models for the resolution of the Hubble crisis**, G. Alestas, D. Camarena, E. Di Valentino, L. Kazantzidis, V. Marra, S. Nesseris and L. Perivolaropoulos, arXiv: 2110.04336 (Accepted in Phys.Rev.D)
3. **Hints for a gravitational constant transition in Tully-Fisher data**, G. Alestas, I. Antoniou and L. Perivolaropoulos, Universe 7 (2021) 366, DOI: 10.3390/universe7100366, (More than 10 citations)
4. **Late time approaches to the Hubble tension deforming  $H(z)$ , worsen the growth tension**, G. Alestas, L. Perivolaropoulos, Mon.Not.Roy.Astron.Soc. 504 (2021) 3, 3956-3962, DOI: 10.1093/mnras/stab1070, (More than 25 citations)

5. **A  $w-M$  phantom transition at  $z < 0.1$  as a resolution of the Hubble tension**, G. Alestas, L. Kazantzidis, L. Perivolaropoulos, Phys.Rev.D 103 (2021) 8, 083517, DOI: 10.1103/PhysRevD.103.083517, (More than 25 citations)
6. **Existence and Stability of Static Spherical Fluid Shells in a Schwarzschild-Rindler-anti-de Sitter Metric**, G. Alestas, G.V. Kraniotis, L. Perivolaropoulos, Phys.Rev.D 102 (2020) 104015, DOI: 10.1103/PhysRevD.102.104015, (More than 5 citations)
7.  **$H_0$  tension, phantom dark energy, and cosmological parameter degeneracies**, G. Alestas, L. Kazantzidis, L. Perivolaropoulos, Phys.Rev.D 101 (2020) 12, 123516, DOI: 10.1103/PhysRevD.101.123516, (More than 80 citations)
8. **Evading Derrick's theorem in curved space: Static metastable spherical domain wall**, Alestas G., Perivolaropoulos L., Phys.Rev.D 99 (2019) no.6, 064026, DOI: 10.1103/PhysRevD.99.064026, (More than 5 citations)

Articles published in conference proceedings:

1. **Stable, Spherical and Thin Fluid Shells**, G. Alestas, G. V. Kraniotis, L. Perivolaropoulos, Published in Phys.Sci.Forum 2021, 2, 24, DOI: 10.3390/ECU2021-09332
2. **An Overview of Nonstandard Signals in Cosmological Data**, G. Alestas, G. V. Kraniotis, L. Perivolaropoulos, Published in Phys.Sci.Forum 2021, 2, 28, DOI: 10.3390/ECU2021-09333

## Scholarships & Grants

2021-22	<b>Fellow of the Greek State and the European Union (European Social Fund – ESF) through the Operational Programme "Competitiveness, Entrepreneurship and Innovation 2014-2020 (EPAnEK)"</b>
2020-21	<b>Fellow of the Greek State and the European Union (European Social Fund – ESF) through the Operational Programme "Human Resources Development, Education and Lifelong Learning 2014-2020"</b>
2020	<b>European Cooperation in Science &amp; Technology (COST) grant for a short term scientific mission (STSM) in the context of the action "CA15117 - Cosmology and Astrophysics Network for Theoretical Advances and Training Actions (CANTATA)" and the project "Search for Hints of Modified Gravity in Cosmological Data"</b>

## Conferences Attended & Talks Given

- HEP 2020 - 38th Conference on Recent Developments in High Energy Physics and Cosmology, September 2021, Athens, Greece.
- 16th Marcel Grossmann Meeting - MG16, July 2021, Rome, Italy, **(Talk)**
- 19th online Conference in the String Phenomenology Conference Series, June 2020, Boston, United States.
- 9th Korea Institute of Advanced Study (KIAS) Workshop on Cosmology and Structure Formation webinar, November 2020, Seoul, South Korea
- Workshop on Quantum Fields and Nonlinear Phenomena, SEENET-MTP-CERN-ICTP Joint Meeting, 2020, Romania, **(Talk)**

- SEENET-MTP Balkan School on High Energy and Particle Physics: Theory and Phenomenology, 2019, Ioannina, **(Talk)**
- HEP 2019 - Recent Developments on High Energy Physics and Cosmology, 2019, Athens

## Research Interests

Theoretical Cosmology, Observational Cosmology, Hubble Tension, Modified Gravity Theories, Dark Energy, Data Analysis, Gravitational waves, Soliton Physics.

## Programming Knowledge

- Linux, Windows
- Python, C/C++, Fortran, HTML, Tensorflow
- COSMOMC/CAMB, MontePython/Class, Mathematica, Matlab

## Skills

Cosmology, Theoretical Astrophysics, Computational Physics, General Relativity, Data Analysis

## Referee Work

I am a referee for the Monthly Notices of the Royal Astronomical Society (MNRAS) journal. For more details please click [here](#) to visit my Publons profile.

## Teaching Experience

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|---------|---|
| 2021-22 | <b>Teaching Assistant</b> <span style="float: right;"><a href="#">University of Ioannina</a></span><br>Classical Electrodynamics I (5th Semester Core Course – 52), my duties were:<br>1. The tutoring of third year students.<br>2. The grading of weekly assignments. |
| 2021-22 | <b>Teaching Assistant</b> <span style="float: right;"><a href="#">University of Ioannina</a></span><br>Gravity and General Theory of Relativity (Advanced Undergraduate Elective Course – 106), my duties were:<br>1. The grading of weekly assignments and reports.    |
| 2020-21 | <b>Teaching Assistant</b> <span style="float: right;"><a href="#">University of Ioannina</a></span><br>Cosmology (Advanced Undergraduate Elective Course – 105), my duties were:<br>1. The grading of weekly assignments and reports.                                   |

2020-21	<b>Teaching Assistant</b> Gravity and General Theory of Relativity (Advanced Undergraduate Elective Course – 106), my duties were: 1. The grading of weekly assignments and reports.	<a href="#">University of Ioannina</a>
2019-20	<b>Teaching Assistant</b> Classical Electrodynamics I (5th Semester Core Course – 52), my duties were: 1. The grading of weekly assignments and reports.	<a href="#">University of Ioannina</a>
2016-17	<b>Teaching Assistant</b> Astrophysics Laboratory (TAE450), my duties were: 1. The tutoring of third and fourth year students. 2. The grading of weekly assignments and reports.	<a href="#">University of Patras</a>
2016-17	<b>Teaching Assistant</b> Astronomy Laboratory (TAE451), my duties were: 1. The tutoring of third and fourth year students. 2. The grading of weekly assignments and reports. 3. Demonstrating the use of Astronomical equipment.	<a href="#">University of Patras</a>

## Societies

- Student Member of the American Physical Society (APS)
- Junior Member of the Hellenic Society on Relativity, Gravitation and Cosmology

## Professional References

Prof. Leandros Perivolaropoulos - [leandros@uoi.gr](mailto:leandros@uoi.gr) (PhD Advisor)  
 Dr. Eleonora Di Valentino - [E.Divalentino@shef.ac.uk](mailto:E.Divalentino@shef.ac.uk)  
 Asst. Prof. Savvas Nesseris - [savvas.nesseris@csic.es](mailto:savvas.nesseris@csic.es)  
 Asst. Prof. Panagiota E. Christopoulou - [pechris@physics.upatras.gr](mailto:pechris@physics.upatras.gr)