

Research interests

Theoretical cosmologist working on the effective field theory of open (dissipative) systems and its application to the early universe. Current programme: open EFTs for inflation, gauge fields and gravity built on the Schwinger–Keldysh formalism. Earlier work: multi-field inflation – attractor solutions in curved field spaces, rapid-turn dynamics, enhancement of the power spectrum and primordial black hole production – and signatures of parity-violating gravity in the bispectrum.

Profiles [ORCID 0000-0003-0223-0064](#) · [INSPIRE-HEP](#) · [Google Scholar](#)

Positions

- 2024–2025 **Visiting research fellow**, *Korea Institute for Advanced Study*, Seoul, South Korea
2021–2026 **Post-doctoral researcher**, *Ewha Womans University*, Seoul, South Korea

Education

- 2016–2021 **PhD in Theoretical Physics**, *University of Groningen*, Groningen, Netherlands
Thesis: [Dynamics and observational signatures from multi-field inflation](#)
Supervisor: Diederik Roest
- 2014–2015 **MSc in Physics and Perimeter Scholars International certificate**, *University of Waterloo – Perimeter Institute*, Waterloo, Canada
PSI essay: Exploring the Dynamics of Gauss-Bonnet Gravity in Asymptotically Anti-de-Sitter Spacetime
Supervisor: Luis Lehner
- 2008–2014 **BSc in Physics**, *National and Kapodistrian University of Athens*, Athens, Greece,
Grade: 8.71/10 (Specialty: Astrophysics)
Thesis: The two-body problem in General Relativity – one-body approximate solution
Supervisor: Theocharis Apostolatos

Honors, Awards, Scholarships and Research funding

- 2024 Visiting research fellowship, 6 months, 6,000,000 KRW (Korea Institute for Advanced Study)
- 2016 Two-month visiting scholarship, 2000 EUR (University of Groningen)
- 2014 “Anaximandros Fellowship”, 33000 CAD (Perimeter Scholars International)
- 2008 “Andreas Prokopiou” Award, 1000 EUR, for the top score among Cypriots of Greece in the Panhellenic entrance exams (Cypriot Union of Greece); finalist of the Panhellenic Physics Competition

Publications

Citation counts as of 09/2026: **365** INSPIRE-HEP (**301** excluding self-citations); **361** Google Scholar; h-index 8. Per-paper counts below from INSPIRE-HEP.

Preprints

- [1] P. Christodoulidis and J. O. Gong, “Gravitational open effective field theory of inflation,” [[arXiv](#)] [7 cit.]
- [2] P. Christodoulidis, R. Rosati and E. I. Sfakianakis, “Robust non-minimal attractors in many-field inflation,” [[arXiv](#)] [6 cit.]

Refereed articles

- [3] A. Achúcarro, P. Christodoulidis, J. O. Gong and O. Iarygina, “Ultra slow-turn inflation,” *JCAP* **06** (2026) 059 [[arXiv](#)] [3 cit.]
- [4] P. Christodoulidis, “Emergent structures and consistency of open EFTs,” *JHEP* **05** (2026) 145 [[arXiv](#)] [6 cit.]
- [5] P. Christodoulidis, J. O. Gong, W. C. Lin, M. Mylova and M. Sasaki, “New shape for cross-bispectra in Chern-Simons gravity,” *JCAP* **01** (2025) 037 [[arXiv](#)] [6 cit.]
- [6] P. Christodoulidis and J. O. Gong, “Enhanced power spectra from multi-field inflation,” *JCAP* **08** (2024) 062 [[arXiv](#)] [19 cit.]
- [7] P. Christodoulidis and R. Rosati, “(Slow-)twisting inflationary attractors,” *JCAP* **09** (2023) 034 [[arXiv](#)] [14 cit.]
- [8] P. Christodoulidis, “General solutions to $\mathcal{N}$ -field cosmology with exponential potentials,” *Eur. Phys. J. C* **81** (2021) 471 [[arXiv](#)] [14 cit.]
- [9] P. Christodoulidis and A. Paliathanasis, “ $\mathcal{N}$ -field cosmology in hyperbolic field space: stability and general solutions,” *JCAP* **05** (2021) 038 [[arXiv](#)] [20 cit.]
- [10] P. Christodoulidis, D. Roest and E. I. Sfakianakis, “Attractors, Bifurcations and Curvature in Multi-field Inflation,” *JCAP* **08** (2020) 006 [[arXiv](#)] [64 cit.]
- [11] P. Christodoulidis, D. Roest and R. Rosati, “Many-field Inflation: Universality or Prior Dependence?,” *JCAP* **04** (2020) 021 [[arXiv](#)] [17 cit.]
- [12] P. Christodoulidis, D. Roest and E. I. Sfakianakis, “Scaling attractors in multi-field inflation,” *JCAP* **12** (2019) 059 [[arXiv](#)] [87 cit.]
- [13] P. Christodoulidis, D. Roest and E. I. Sfakianakis, “Angular inflation in multi-field α -attractors,” *JCAP* **11** (2019) 002 [[arXiv](#)] [102 cit.]

Talks

48 talks in total: 31 at workshops and conferences (6 invited), 13 invited seminars, 4 at summer/winter schools; 2 posters. Selection below, full list on request.

Workshops and conferences

- 2026 “An open effective field theory of inflation with dynamical gravity”, Cosmo-26 (Leiden, Netherlands)
- 2026 “Dissipative EFTs in cosmology”, Contours 2026: Effective Field Theories Meet the Schwinger–Keldysh Formalism (Cambridge, United Kingdom)
- 2026 “Dissipative EFT of inflation”, Gravity2026: New Frontiers in Cosmology (Daejeon, Korea)
- 2026 “Dissipative EFT in cosmology”, Workshop on particle physics and cosmology: Jeju 2026 (Jeju, Korea)
- 2026 “Open EFTs in cosmology”, 3rd Bangkok workshop on gravity and cosmology (Bangkok, Thailand)
- 2025 “Emergent structures in open EFTs”, Cosmo 25 - Carnegie Mellon University (Pittsburgh, USA)
- 2025 “Open EFTs for gauge fields and gravity”, NEB21 - Recent Developments in Gravity (Corfu, Greece) **invited**
- 2025 “Open EFT for inflation”, 2025 Korea-Japan Joint Workshop on Cosmology, Gravitation and Particle Physics @ Nagoya (Nagoya, Japan)
- 2025 “Open system EFT for gauge fields and gravity”, CosPA (Daejeon, South Korea)
- 2025 “Open EFT of inflation”, CoBALt (Orsay, France)
- 2025 “EFT of non-conservative systems and applications to inflation”, New Perspectives on Cosmology 2025 (Pohang, South Korea) **invited**
- 2025 “Dissipative EFT of inflation”, 2nd Bangkok workshop on gravity and cosmology (Bangkok, Thailand)
- 2019–2024 19 further contributed talks on multi-field attractors, rapid-turn inflation and enhanced power spectra (4 invited), including Multifield Cosmology: Inflation, Dark Energy and More (Stony Brook, USA), New Perspectives on Cosmology 2024 (Pohang, South Korea, **invited**), COSMO22 (Rio de Janeiro, Brazil), Korea-Japan joint workshop (Jeonju, South Korea, **invited**), 100 + 7 GR & Beyond: Inflation (Jeju, South Korea, **invited**), IBS-PNU Joint Workshop (Busan, South Korea, **invited**), Texas 2019 (Portsmouth, United Kingdom), Inflation and Geometry (Paris, France)

Invited seminars

- 2025 “Emergent structures in open EFTs”, University of Cambridge (Cambridge, UK)
- 2025 “Emergent structures in open EFTs”, Villanova University (Philadelphia, USA)
- 2025 “Ultra slow-turn inflation”, MIT (Boston, USA)
- 2025 “Open EFT of gauge fields and inflation”, APCTP (Pohang, South Korea)

2019–2024 9 further seminars on multi-field inflation: IBS (Daejeon), Theoretical Cosmology Meetings in the Netherlands (Leiden), University of Groningen, University of Nottingham, Queen Mary University of London, University of Southampton, IAP (Paris), Academy of Athens, University of Athens

Teaching Experience

- 2022–2023 **Co-supervision of student research projects**, *Ewha Womans University*
Jiwon Kong and JiEun Jeon, project on cosmological perturbations
- 2018 **Co-supervision of a BSc thesis**, *University of Groningen*
Tim de Wild, “[Primordial Non-Gaussianity in the Single and Multi-Field Inflationary Scenarios](#)”
- 2016–2020 **Teaching assistant**, *University of Groningen*
Physics of the Quantum Universe (BSc year 1), Quantum Physics 1 (BSc year 2), Relativistic Quantum Mechanics (BSc year 3)

Refereeing

Journal of Cosmology and Astroparticle Physics
European Physical Journal C

References

Ana Achúcarro (Leiden University), email: achucar@lorentz.leidenuniv.nl
Jinn-Ouk Gong (Ewha Womans University), email: jgong@ewha.ac.kr
Diederik Roest (University of Groningen), email: d.roest@rug.nl
Evangelos Sfakianakis (University of Texas at Austin), email: evangelos.sfakianakis@case.edu