

Constantinos Skordis, PhD

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EDUCATION

Oct. 1998 - Apr 2002 University of California at Davis
PhD in Physics (Theoretical Cosmology)
Thesis: 'The accelerating Universe: Models and consequences.'
Advisor: Andreas Albrecht
Oct. 1995 - Jul. 1998 Imperial College of Science, Technology and Medicine
BSc in Physics with Theoretical Physics, 1stClass Hons
Final year project: 'Neutrino oscillations and the solar neutrino problem'
Advisor: Tom Kibble, FRS

CURRENT POSITIONS

2016 - Senior Researcher (permanent)
CEICO, Institute of Physics of the Czech Academy of Sciences, Czechia

PREVIOUS POSITIONS

2013 - 2019 Assistant professor, Department of Physics, University of Cyprus, Cyprus
2011 - 2014 Proleptic Lecturer, School of Physics & Astronomy, University of Nottingham, UK
2010 - 2014 Royal Society University Research Fellow, University of Nottingham, UK
2009 - 2010 Postdoctoral researcher, School of Physics & Astronomy, University of Nottingham, UK
2005 - 2009 Postdoctoral researcher, Perimeter Institute for theoretical physics, Canada
2002 - 2005 Postdoctoral researcher, Astrophysics, University of Oxford, UK

PUBLICATIONS

***h*-index of 37 according to Inspire HEP database, as of 1 Apr 2023.**

I (co)authored a total of 61 journal articles and conference proceedings, of which 3 are with large collaborations and 2 are invited review articles in international peer reviewed journals.

Selected 10 most relevant articles:

- 1 **C. Skordis** & T. Zlosnik, 'New Relativistic theory for Modified Newtonian Dynamics', Phys. Rev. Lett. 127, 161302 (2021); <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.127.161302>
- 2 E.J. Copeland, M. Kopp, A. Padilla, P. M. Saffin & **C. Skordis**, 'Dark Energy after GW170817 revisited', Phys. Rev. Lett. 122, 061301 (2019); <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.061301>
- 3 M.Kopp, **C.Skordis**, D.Thomas & S.Ilic, 'Dark Matter Equation of State through Cosmic History', Phys. Rev. Lett. 120, 221102 (2018); <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.120.221102>
- 4 M.Kopp K. Vattis & **C.Skordis**, 'Solving the Vlasov equation in two spatial dimensions with the Schroedinger method' Phys. Rev. D96, 123532 (2016); <https://journals.aps.org/prd/abstract/10.1103/PhysRevD.96.123532>

- 5 T. Baker, D. Psaltis and **C. Skordis**, ‘*Linking Tests of Gravity On All Scales: from the Strong-Field Regime to Cosmology*’, *Astrophys. J.* 802, (2015); <https://iopscience.iop.org/article/10.1088/0004-637X/802/1/63>
- 6 A. Avilez-Lopez, A. Padilla, P. Saffin & **C. Skordis**, ‘*The Parametrized Post-Newtonian-Vainshteinian Formalism*’, *JCAP* 1506, 044 (2015); <https://iopscience.iop.org/article/10.1088/1475-7516/2015/06/044>
- 7 A. Avilez & **C. Skordis**, ‘*Cosmological constraints on Brans-Dicke theory*’, *Phys. Rev. Lett.* 113, 011101 (2014); <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.113.011101>
- 8 T. Baker, P. G. Ferreira & **C. Skordis**, ‘*The parameterized post-Friedmann framework for theories of modified gravity: Concepts, formalism, and examples*’, *Phys. Rev. D* 87, 024015 (2013); <https://journals.aps.org/prd/abstract/10.1103/PhysRevD.87.024015>
- 9 T. Clifton, P. G. Ferreira, A. Padilla & **C. Skordis**, ‘*Modified Gravity and Cosmology*’, *Phys. Rep.* 513, 1 (2012); <https://www.sciencedirect.com/science/article/pii/S0370157312000105?via%3Dihub>
- 10 M. Pospelov, A. Ritz & **C. Skordis**, ‘*Pseudoscalar perturbations and polarization of the Cosmic Microwave Background*’, *Phys. Rev. Lett.* 103, 051302 (2009); <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.103.051302>

SOFTWARE DEVELOPMENT

- 1 GDM-Class, open-source code under MIT Licence: https://github.com/s-ilic/gdm_class_public
- 2 Schoedinger-Vlasov solver using NVIDIA CUDA – in Cuda C. Not publicly available
- 3 Cosmological Boltzmann solver for CMB anisotropies – in C. Not publicly available

RESEARCH GRANTS

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|------------|------------------------|---|
| PI | Jan 2020 -
Dec 2022 | Barrande grant for Czech-French mobility and collaboration activities (with L. Blanchet, IAP) |
| Supervisor | Oct 2019 -
Oct 2021 | Fellow: Gizem Sengor -- Marie Skłodowska Curie Individual Fellowship. <i>SymAcc: Symmetries during epochs of accelerated expansion.</i> |
| PI | Nov 2016 -
Jun 2023 | OP-VVV. Czech Ministry of Education/EU structural funds grant, CoGraDS: <i>Cosmology, Gravity and the Dark Sector of the universe.</i> |
| PI | Aug 2014 -
Jan 2020 | ERC Consolidator Grant, TheMoDS: Theories and Models of the Dark Sector: Dark Matter, Dark Energy and Gravity |
| PI | Sep 2010-
Sep 2014 | Marie Skłodowska Curie International Re-Integration Grant. <i>CosmoGrav: Cosmological tests of gravity.</i> |
| Co-I | Oct 2014-
2017 | STFC consolidator grant ‘ <i>Cosmology of the Early and Late Universe</i> ’, Particle Theory and Quantum gravity groups (Nottingham). PI: Ed Copeland, 9 other Co-Is. |
| Co-I | Oct 2011-
2014 | STFC consolidator grant ‘ <i>Cosmology of the Early and Late Universe</i> ’, Particle Theory and Quantum gravity groups (Nottingham). PI: Ed Copeland, 8 other Co-Is. |

INVITED TALKS AT INTERNATIONAL CONFERENCES

I have given over 60 invited talks (including at Cambridge, CWRU, Fermilab, Heidelberg, Imperial College, NORDITA, Oslo, Helsinki, ICG Portsmouth, Syracuse, Oxford, Perimeter Institute, and Copernicus series) of which 29 have been at international conferences and workshops. Since Jan 2016 highlights include:

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|----------|--|
| Mar 2023 | <i>Rencontres de Moriond – Gravitation</i> conference, La Thuile, Italy. |
| Sep 2022 | <i>Texas Symposium in Relativistic Astrophysics</i> , Prague, Czechia |
| Aug 2022 | <i>Cosmology lectures at IDPASC Summer School, Olomouc</i> Czechia |
| Nov 2021 | <i>News from the Dark</i> conference, Annecy, France |
| Sep 2021 | <i>Recent developments in Gravity</i> conference, Athens, held online |

Curriculum Vitae

- Jul 2021 *Gravitational Wave Probes of Physics Beyond Standard Model* conference, held online
Jul 2021 *16th Marcel Grossman meeting* held online
Jun 2020 *Alternative theories of gravity* workshop, Strasbourg, France (online)
Oct 2019 *Cosmic Controversies* conference, Chicago, USA.
Mar 2019 *Rencontres de Moriond – Gravitation* conference, La Thuile, Italy.
Oct 2018 *Modern Aspects of Gravity and Cosmology* workshop, Orsay, France.
May 2018 *Numerics for cosmology – the Schrodinger method* workshop, WPI, Vienna, Austria.
May 2016 *Theoretical Cosmology in the Era of Large Surveys* GGI conference, Florence, Italy.
Apr 2016 *Cosmology after Planck: what is next?* school, Les Houches, France.

AWARDS and FELLOWSHIPS

Oct 2010 – Dec 2014 Royal Society University Research Fellowship

PUBLIC OUTREACH

In the last 10 years, I have frequently engaged in public outreach, from lecturing on exciting topics in cosmology to 16-17 year old high school students to raising the scientific interest of the general public through talks and TV appearances, mentoring the Cyprus Physics Olympiad team and participating at science fairs.

SUPERVISION OF GRADUATE STUDENTS and POSTDOCTORAL FELLOWS

<u>MSc</u>	total of 6 MSc students (2 in Nottingham and 4 in Cyprus)
<u>PhD</u>	
2010-2014	Dr Tessa Baker, Univ. of Oxford, UK – co-Supervision (official supervisor, P. Ferreira)
2011-2015	Dr Ana Avilez, Univ. of Nottingham, UK
Feb 2018 -	Marianthi Bataki, Univ. of Cyprus, Cyprus
Sep 2022 -	Despoina Farakou, Charles University, Czechia
Mar 2023 -	David Vokrouhlicky, Charles University, Czechia
<u>Postdocs</u>	A. Pourtsidou, D. Thomas, N. Bolis, K. Farnsworth, S. Ilic, M. Kopp, R. Oliveri, W. Emond, R. Samanta, W. Emond, O. Ozsoy, S. Park, G. Sengor, K. Tanidis, T. Zlosnik.

TEACHING ACTIVITIES

At all positions I held at universities I have been an active teacher. I started the mini series of lectures as a postdoc in Nottingham (teaching 3 lectures in 2009) and this format still continues. I was an invited tutor at BUSSTEPP theoretical physics summer school (2 weeks), held in Swansea (2010) and Nottingham (2011) and an invited lecturer at the Les Houches school “Cosmology after Planck: What’s next” in 2016.

As faculty member in Nottingham, I taught the MPAGS lectures in cosmology (2012, 2013) offered to graduate students from nearby universities. In 2012, I designed the Modern Cosmology course (MSc and 4th year BSc) and shared it with Prof. E. Copeland. I taught the course again in 2013, and it has been taught since. Moving to U. Cyprus, I taught the undergraduate courses Mathematical Methods I (2013 - 2015) and General Relativity (2014).

MAJOR COLLABORATIONS

2010 - 2017 EUCLID consortium, Theory Workgroup. Left the consortium as Czechia is not in EUCLID.

ORGANIZATION OF INTERNATIONAL SCIENTIFIC MEETINGS

- 2023 CEICO: ‘Perspectives on Large Scale Structure’, Advanced Summer school’, 2nd edition, Prague, Czechia (120 participants)
2023 CEICO: ‘All Lambdas Holography @ Prague’, 2nd edition, Prague, Czechia
2022 CEICO: ‘Gravity @ Prague, Advanced Summer school’, 2nd edition, Prague, Czechia (120 participants)

- 2021 CEICO: 'All Lambdas Holography @ Prague, online workshop', Prague, Czechia (260 participants)
- 2021 CEICO: 'Synergies @ Prague, winter workshop', Prague, Czechia (50 participants)
- 2020 ICHEP, session convener: Astroparticle Physics and Cosmology, Prague, Czechia.
- 2019 CEICO: 'Multimessengers @ Prague, winter workshop', Prague, Czechia (50 participants)
- 2019 'The nature of Dark Matter and Large-Scale Structure.' workshop, Cyprus (25 participants)
- 2018 CEICO: 'Gravity @ Prague, Advanced Summer school', Prague, Czechia (105 participants)
- 2015 'Alternative gravity and alternative matter', Heraklion, Greece (35 participants)
- 2013 'Tales of Lambda', Nottingham, UK (80 participants)
- 2013 'Cosmological tests of gravity', Oxford, UK
- 2007 'Origins of Dark Energy' conference, Perimeter Institute, Canada
- 2007 'Excursions in the dark' workshop, McMaster university, Canada
- 2006 'Cosmology on the great lakes', Perimeter Institute, Canada

INSTITUTIONAL RESPONSIBILITIES

Jan 2022 -	Head of Department of Cosmology and Gravitational Physics, Institute of Physics (FZU) of the Czech Academy of Sciences (CzAS), Czechia
Sep 2018 - Dec 2021	Deputy head, Department of Particle Theory and Cosmology, FZU, CzAS, Czechia
Sep 2016 - Dec 2021	Head of Cosmology and Gravity group, FZU, CzAS, Czechia
2021 & 2022	MSCA COFUND institutional application writing group, FZU, CzAS, Czechia
2022	Mentor program, FZU, CzAS, Czechia
2020 -	Prague Doctoral program, Evaluation committee, Czechia
2016	University postdoctoral fellowship evaluation committee, U. Cyprus, Cyprus
2010 - 2013	PhD student evaluation committee, U. Nottingham, UK
2010 - 2013	Postdoc evaluation committee, U. Nottingham, UK
2012	Junior faculty selection committee, U. Nottingham, UK

COMMISSIONS OF TRUST AND SERVING SCIENTIFIC COMMUNITY

Journal referee	PRL, PRD, JCAP, MNRAS, APJ Letters, Classical and quantum gravity, Science, AHEP, Europhysics Letters, IJMP D, Journal of Physics A.
Funding agencies	Research Executive Agency (REA) since 2019, NWO (Netherlands), Swiss Science Foundation, FONDECYT (Chile).
PhD examiner	S. Zhou (U. Nottingham, 2011) E. Sagi (Hebrew U., Jerusalem, 2011) A. Mozaffari (Imperial College, 2013) R. Oliveri (Université Libre de Bruxelles, 2018) P. Jirousek (Charles University, 2022, committee chair)
Habilitation committee member	D. Kubiznak (Charles University) for Associate Professor
Consulting	Expert advice for ERC applicants National Training Programme, Czechia