
Ayngaran Thavanesan

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EDUCATION

Kavli Institute for Cosmology, Cambridge - University of Cambridge	2019 - Present
Jesus College, University of Cambridge	2021 - Present
PhD candidate in Theoretical Cosmology	
Institute of Physics (IOP) Bell Burnell Graduate Scholarship	
Jesus College David & Susan Hibbitt Scholarship (honorary)	
Thesis: 'Constraining the wavefunction of the universe at the early and late conformal boundaries (TBC)'	
<i>Thesis advisors:</i> TBC	
School of Physics and Astronomy, Queen Mary University of London	2018 - 2019
MSc in Astrophysics	
MSc: Distinction (Rank: 1/25, 82%)	
Master's Thesis: 'Modelling Cosmological Perturbations in Metric Theories of Gravity' (<i>Dr. Tim Clifton</i>)	
The Drapers' Company Prize	
Emmanuel College, University of Cambridge	2015 - 2018
BA (Hons) in Natural Sciences	
Whitgift School, Croydon	2007 - 2014
Whitgift Academic Scholarship & Bursary	

SELECTED AWARDS AND PRIZES

Jesus College David & Susan Hibbitt Scholarship (3 years) [declined]	Jun. 2021
<i>Awarded £30000 for PhD position at University of Cambridge by Jesus College, Cambridge</i>	Cambridge
Institute of Physics (IOP) Bell Burnell Graduate Scholarship (3.5 years)	Apr. 2021
<i>Awarded £35000 for PhD position at University of Cambridge by the UK's Institute of Physics</i>	Cambridge
Cavendish Scholarship (3.5 years)	Mar. 2021
<i>Awarded ~£85000 for PhD position at University of Cambridge by the Cavendish department</i>	Cambridge
de Sitter fellowship (4 years) [declined]	Feb. 2021
<i>Joint PhD position at Institute Lorentz for Theoretical Physics and Leiden Observatory</i>	Netherlands
Delta Institute for Theoretical Physics PhD visitor programme	Postponed (COVID)
<i>PhD visitor programme with Prof. Daniel Baumann & Prof. Jan Pieter van der Schaar</i>	Netherlands
Awarded a 6-month visiting position to collaborate with academics in the Institute Lorentz for Theoretical Physics at Leiden University and the Institute for Theoretical Physics at the University of Amsterdam.	
Visiting scholar at Institute of Astronomy, Cambridge	Nov. 2020 - Sep. 2021
<i>Visiting scholar's grant to work within the University of Cambridge's cosmology departments</i>	Cambridge, UK
Gold Duke of Edinburgh Award	Jun. 2014
Cambridge Chemistry Challenge Gold Award	Jun. 2013

PUBLICATIONS

1. **Thavanesan, A.**, Werth, D., Handley, W. "Analytical approximations for curved primordial power spectra", published by *Physical Review D* ([PhysRevD.103.023519](#)).
2. Gessey-Jones, T., **Thavanesan, A.**, Handley, W. "Analytically approximations for primordial power spectra with a kinetically dominated pre-inflationary regime", *awaiting submission*.
3. **Thavanesan, A.**, Ganguly, C. "Initial conditions for bouncing universes", *in preparation*.

SKILLS

Computing Languages	Python, C, Mathematica, Java, HTML
OS	Linux, Windows, Mac OS
Programmes & Tools	L ^A T _E X, MATLAB, CLASS, CAMB, UltraNest , healpy, Gnuplot, anesthetic
Languages	English (Native), German (Professional), Tamil (Conversational), French (Basic)

RESEARCH EXPERIENCE

Delta Institute for Theoretical Physics Leiden & Amsterdam <i>PhD visitor programme with Prof. Subodh Patil & Prof. Daniel Baumann</i>	Postponed (COVID) <i>Netherlands</i>
University of Cambridge Department of Applied Mathematics & Theoretical Physics (DAMTP) <i>Collaboration with Prof. Anne-Christine Davis, Dr. Sebastián Céspedes & Dr. Dong-Gang Wang</i>	Dec. 2020 - Present <i>Cambridge, UK</i>
University of Cambridge Department of Applied Mathematics & Theoretical Physics (DAMTP) <i>Collaboration with Dr. Chandrima Ganguly</i>	Nov. 2020 - Present <i>Cambridge, UK</i>
University of Cambridge Kavli Institute for Cosmology, Cambridge <i>Collaboration with Dr. Will Handley</i>	Oct. 2019 - Present <i>Cambridge, UK</i>

TALKS - ACADEMIC & PUBLIC

Jul. 2021	Cosmology from Home (Cosmology from Home 2021) <i>Various talks</i>
Mar.-Apr. 2021	Cambridge Science Festival (Black Hole Wars) <i>Black Hole Wars: Episodes I and IV</i>
Mar. 2021	Cambridge University Astronomy (Public Open Evening) <i>The topsy-turvy quantum world</i>
Jan. 2021	Queen Mary University of London (50th BUSSTEPP) <i>Initial conditions for the early universe</i> (4 mins)
Jan. 2021	Cambridge University & Ludwig-Maximilians-University Munich (Cosmology Workshop 2021) <i>Initial conditions for the early universe</i> (10 mins)
Dec. 2020	Cambridge University Astronomy (Astronomy on Tap) <i>To Inflation and Beyond!</i>
Dec. 2020	Centre for Particle Theory, Durham (YTF 20 Conference) <i>Analytical Approximations for Curved Primordial Power Spectra</i>
Jul. 2020	Department of Applied Mathematics & Theoretical Physics, Cambridge (Cosmo. Journal Club) <i>Analytical Approximations for Curved Primordial Power Spectra</i>

TEACHING

University of Cambridge (Natural Sciences & Mathematics) <i>Supervisor (small group tutor)</i>	Oct. 2020 - Present <i>Cambridge, UK</i>
· Supervising (small group tutoring) for General Relativity (3rd year), Principles of Quantum Mechanics (3rd year), Galactic Dynamics (3rd year), Oscillations, Waves & Optics (2nd year) and Experimental Methods (2nd year).	
CleverClogs, Leading Education, VIPTutors, Test Teach, Surrey Tutors, Private Tutor <i>Tutor</i>	Jul. 2010 - Present <i>UK & Online</i>
· Provided face-to-face and online tutoring to students for courses up to and including degree level.	
· Provided face-to-face interview preparation to students for Oxbridge undergraduate admissions.	

ATTENDED CONFERENCES

Jul. 2021	Cosmology from Home 2021 <i>Cosmology from Home 2021</i>
Mar. 2021	Physik-Combo <i>Strong Dynamics and Criticality in Quantum and Gravitational Systems</i>
Jan.- Feb. 2021	Queen Mary University of London <i>50th BUSSTEPP</i>
Jan. 2021	University of Cambridge & Ludwig-Maximilians-University Munich <i>Cam-LMU Cosmology Workshop 2021</i>
Jan. 2021	University of Cambridge <i>The Rise of Field Theory</i>
Dec. 2020	Centre for Particle Theory, Durham <i>YTF 20</i>
Sep. 2020	University of Sheffield <i>UK Cosmo</i>
Sep. 2020	University of Cambridge <i>Cosmological Correlators</i>
Sep. 2020	Queen Mary University of London <i>GR simulations in cosmology</i>
Jun. 2020	University of Michigan <i>Cosmology Summer School 2020</i>
Jan. 2020	Durham's Institute for Particle Physics Phenomenology <i>Quantum Sensors for Fundamental Physics</i>

PROFESSIONAL ACTIVITIES

Equality & Diversity	Promoting equality at the University of Cambridge <i>Co-wrote successful application to fund BAME postgraduate research at Cambridge, by using my background to determine methods to tackle inequality and improve minorities' experiences.</i> Co-organiser of DAMTP Racism Discussion Group <i>Co-organising racism discussion group at Cambridge's DAMTP, which meets every few weeks to discuss how to tackle different forms of racism present in the university and society as a whole, including but not limited to cultural, economical and institutional racism.</i>
Outreach	Organiser and speaker at 2021 Cambridge Science Festival <i>Organised a series of five talks on the recent progress of the black hole information paradox. These talks featured experts on the field as well as resident PhD students at Cambridge.</i>
Sports	University 1st team (Blues) badminton captain, Club level football player

REFEREES

Prof. AC Davis <i>(Collaborator)</i> DAMTP Wilberforce Road Cambridge, CB3 0WA, UK Tel: +44 1223 337878 A.C.Davis@damtp.cam.ac.uk	Dr. E Pajer <i>(DAMTP Advisor)</i> DAMTP Wilberforce Road Cambridge, CB3 0WA, UK Tel: +44 1223 766918 enrico.pajer@gmail.com	Dr. W Handley <i>(Cavendish Advisor)</i> Kavli Institute for Cosmology Madingley Road Cambridge, CB3 0HA, UK Tel: +44 1223 766660 wh260@mrao.cam.ac.uk
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