Sownak Bose

Curriculum Vitæ

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Employment

Sept 2017–Present **Harvard-Smithsonian Center for Astrophysics, Harvard University**, ITC Fellow.

Education

2013–2017 **Institute for Computational Cosmology, University of Durham**, PhD in Astrophysics, supervised by Prof. Carlos Frenk, Dr. Baojiu Li and Prof. Adrian Jenkins.

2009–2013 **St. Catherine's College, University of Oxford**, Master of Physics (MPhys).

Awards and scholarships

2017–Present ITC Fellowship

2018 Royal Astronomical Society Michael Penston Prize for 'best doctoral thesis in astronomy or astrophysics in the UK'

2018 Springer Thesis Prize – annual award recognising 'outstanding PhD research' internationally. Thesis published as a book by Springer

2018 Winton Doctoral Prize for 'best PhD in Physics using computational methods'

2013–2017 STFC PhD studentship

2016 Keith Nicholas postgraduate prize for 'outstanding overall performance' by a postgraduate student in the Physics department

2012 Master's Book Prize (college award for undergraduate performance)

2012 IoP/Nuffield bursary for undergraduate research

2011 Master's Book Prize

2011 Voted 'best student talk' at St. Catherine's College undergraduate physics seminar

Journal referee

Since May 2018 Journal of Cosmology and Astroparticle Physics (JCAP)

Since May 2017 Referee for the International Journal of Modern Physics, D. (IJMPD)

Since Aug 2016 Referee for the Monthly Notices of the Royal Astronomical Society (MNRAS)

Talks (contributed and invited)

Apr 2018 **KITP Workshop On Cold Dark Matter**, Santa Barbara, California, USA.
The Small(est) Scale Structure In Cold Dark Matter

Apr 2018 **ITC luncheon**, Cambridge, MA, USA.
How the Present-day Distribution of Dwarf Galaxies Encodes the Physics of Reionisation

Mar 2018 **Columbia University Astronomy Seminar**, New York, NY, USA, (invited).
How the Present-day Distribution of Dwarf Galaxies Encodes the Physics of Reionisation

Mar 2018 **Supercomputing Frontiers Europe 2018**, Warsaw, Poland, (invited).
Simulating the Formation of Structure on Supercomputers

Feb 2018 **Sterile Neutrino Dark Matter workshop**, Leiden, The Netherlands, (invited).
Reionising the Universe with Sterile Neutrinos

Nov 2017 **ITC luncheon**, Cambridge, MA, USA.
The Small-Scale Structure of Cold Dark Matter

Nov 2017 **CosmoFest**, Cambridge, MA, USA.
On-the-fly Ray Tracing in N-body Simulations

Jan 2017 **MPA Special Cosmology Seminar**, Munich, Germany, (invited).
Cosmology with Sterile Neutrinos

Oct 2016 **Towards Accurate Lightcones for Cosmology**, Munich, Germany.
On-the-fly Ray Tracing in N-body Simulations

Jun 2016 **National Astronomy Meeting**, Nottingham, UK.
Faster Simulations of Modified Gravity

Mar 2016 **Theoretical Cosmology Seminar**, Portsmouth, UK, (invited).
Cosmological Simulations & Tests of Gravity

Dec 2015 **Virgo Consortium Meeting**, Leiden, The Netherlands.
Structure Formation Near the Free-streaming Scale of Warm Dark Matter

Sep 2015 **RAMSES Users' Meeting**, *Oxford, UK*.
A New Ray Tracing Algorithm in RAMSES

Aug 2015 **1$^{\text{st}}$ Roman Juszkiewicz Symposium**, *Warsaw, Poland*.
Reionisation in Sterile Neutrino Cosmologies

Jun 2015 **National Astronomy Meeting**, *Llandudno, Wales, UK*.
Cosmology with Sterile Neutrinos

Jan 2015 **Beyond ΛCDM**, *Oslo, Norway*.
The Copernicus Complexio: The Warm Dark Matter Universe

Dec 2014 **Virgo Consortium Meeting**, *Munich, Germany*.
The Copernicus Complexio: The Warm Dark Matter Universe

Jul 2014 **νMSM workshop**, *Amsterdam, The Netherlands*.
The Copernicus Complexio: The Warm Dark Matter Universe

Apr 2014 **Modified Gravity workshop**, *Munich, Germany*.
Testing the Quasi-static Approximation in $f(R)$ Gravity Simulations

Programming skills

Python, Fortran90, C, UNIX, LaTeX, Mathematica

Teaching and supervision

2011–Present Teacher in higher level Physics and Mathematics for Lanterna Education

2016–2017 Workshop demonstrator for 3rd year course on Planets & Cosmology

2015–2016 Co-supervisor of a 4th year student's master's (equivalent to MSc.) thesis titled 'Astrophysical Constraints on the Nature of Dark Matter'

2015–2016 Workshop demonstrator for 2nd year Theoretical Physics course on Classical & Quantum Mechanics

2014–2015 Workshop demonstrator for 2nd year Theoretical Physics course on Classical & Quantum Mechanics

2013–2014 Marker for 4th year Theoretical Astrophysics course on Large Scale Structure & General Relativity

Media & outreach

Apr 2018 **Cambridge Explores The Universe**, Harvard College Observatory, Cambridge, MA, USA.

Interactive activity demonstrator, 'Ask an Astronomer'

Mar 2017 **Gravity And Me: The Force That Shapes Our Lives**, BBC4.
Contributor to BBC science programme on the nature of gravity in our Universe

Feb 2017 **This is Durham: Place of Light**, House of Commons, Westminster, UK.
Represented the Institute for Computational Cosmology at the invitation of MP Kevan Jones

Oct 2016 **Celebrate Science**, Durham, UK.
Demonstrator for the 'Galaxy Makers' exhibit

Jul 2016 **Royal Society Summer Exhibition**, London, UK.
Co-developer of the Oculus Rift fly-through of the simulated universe

Jan 2016 **Durham University Space Day**, Durham, UK.
Team leader for a group of schoolchildren

Nov 2015 **Lumiere Light Festival**, Durham, UK.
Core team member responsible for projecting the EAGLE cosmological simulations on Durham Cathedral

Oct 2015 **Celebrate Science**, Durham, UK.
Demonstrator for gravitational lensing demo

Apr 2015 **Schools' Science Festival**, Durham, UK.
Demonstrator for 'How to build a spectrograph'

Oct 2014 **Celebrate Science**, Durham, UK.
Demonstrator for gravitational lensing demo

Dec 2013 **Stockholm Science Event**, Stockholm, Sweden.
Invited by the British Council to talk about dark matter in Stockholm Central Station

Oct 2013 **Celebrate Science**, Durham, UK.
Demonstrator for gravitational lensing demo

References

Prof. Carlos S. Frenk
Ogden Professor of Fundamental Physics
Institute for Computational Cosmology, University of Durham
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Dr. Baojiu Li
Reader in Physics
Institute for Computational Cosmology, University of Durham
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Prof. Adrian R. Jenkins
Professor of Physics
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