

BRUNO VALEIXO BENTO

RESEARCH EXPERIENCE

String Phenomenology and BSM Group

University of Liverpool

October 2019 – Present Liverpool, UK

String phenomenology — warped flux compactifications and implications to cosmology (Dark Energy, Quintessence) and gravitational waves.

With Susha Parameswaran, Ivonne Zavala

Centre for Theoretical Particle Physics

Instituto Superior Tecnico, Universidade de Lisboa

October 2018 – September 2019 Lisboa, Portugal

Extensions to the gauge sector of the Standard Model and unitarity bounds.

With João P. Silva, Jorge Romão

Theoretical Physics Group

Imperial College London

May 2018 – September 2018 London, UK

Causal Set dynamics — growth models and the beginning of time.

With Fay Dowker

Instrumentation and Experimental Particle Physics Laboratory

LIP-Lisbon

June 2016 – September 2016 Lisboa, Portugal

Search for the scalar top quark, cut-and-count and multivariate analysis.

With Pedrame Bargassa

EDUCATION

PhD Mathematical Sciences

University of Liverpool

October 2019 – Present Liverpool, UK

Supervisor: Susha Parameswaran

MSc Quantum Fields and Fundamental Forces (Distinction)

Imperial College London

October 2017 – September 2018 London, UK

Thesis: Causal Set Dynamics and the Problem of Time

Supervisor: Fay Dowker

BSc Engineering Physics (Merit)

Instituto Superior Tecnico, Universidade de Lisboa

September 2014 – June 2017 Lisboa, Portugal

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📍 Liverpool, United Kingdom

🔗 Homepage

🔗 inSpire

I am currently interested in the gravitational effects of **warped flux compactifications** and their phenomenological signatures (**gravitational waves**, **dark energy**). I am also starting to explore the interplay between the **Swampland** and **positivity bounds**, as well as **decay bubble braneworlds** as an alternative to explicit dS vacua.

Apart from research, I have upgraded and have been maintaining the group's website, organised the Student Seminars series and helped organise String Phenomenology 2022. I enjoy **science communication** (public speaking and writing), as well as teaching.

REFERENCES

✉ Dr. Susha Parameswaran

susha@liverpool.ac.uk

✉ Dr. Ivonne Zavala

e.i.zavalacarrasco@swansea.ac.uk

✉ Prof. Thomas Van Riet

thomas.vanriet@kuleuven.be

✉ Prof. Fay Dowker

f.dowker@imperial.ac.uk

SOFTWARE



LANGUAGES

🇬🇧 English ● ● ● ● ●

🇵🇹 Portuguese ● ● ● ● ●

🇪🇸 Spanish ● ● ● ● ●

🇷🇺 Russian ● ● ● ● ●

PUBLICATIONS

"Gravity at the Tip of the Throat"

Bruno Valeixo Bento, Dibya Chakraborty, Susha Parameswaran, Ivonne Zavala , *JHEP* 09 (2022)

"If time had no beginning: growth dynamics for past-infinite causal sets"

Bruno Valeixo Bento, Fay Dowker, Stav Zalel , *Class.Quant.Grav.* 39 (2022)

"A new de Sitter solution with a weakly warped deformed conifold"

Bruno Valeixo Bento, Dibya Chakraborty, Susha Parameswaran, Ivonne Zavala , *JHEP* 12 (2021)

"Dark Energy in String Theory"

Bruno Valeixo Bento, Dibya Chakraborty, Susha Parameswaran, Ivonne Zavala , *PoS CORFU2019* (2020)

Essays and others

"If time had no beginning"

Bruno Valeixo Bento, Stav Zalel

RESEARCH VISITS

Oct 2022 *Short Scientific Visits*, International Network on Quantum Fields and Strings
The Institute for Theoretical Physics, KU Leuven (Host: Thomas Van Riet)

TALKS

Nov 2022 "Gravity at the Tip of the Throat", AnLy seminars

Oct 2022 "Gravity at the Tip of the Throat", ITF (HEP) journal club (KU Leuven)

Jul 2022 "Gravity at the Tip of the Throat", String Phenomenology 2022

Jun 2022 "Gravity at the Tip of the Throat", Planck 2022 (Paris)

May 2022 "Gravity at the Tip of the Throat", SCGSC 2022 (Amsterdam)

"Gravity at the Tip of the Throat", Utrecht University journal club

Apr 2022 "Gravity at the Tip of the Throat", String Pheno Series

Mar 2022 "Giving a talk about stuff", Liverpool Student Seminars

"If time had no beginning", Szczecin Cosmology Group

Dec 2021 "Gravity at the Tip of the Throat – Corrections to the Newtonian potential",
CosmoNATA, University of Lisbon

"Gravity at the Tip of the Throat – Corrections to the Newtonian potential",
Young Theorists Forum 2021

Jun 2021 "de Sitter vacua in String Theory with fluxes, warped throats and anti-branes",
Liverpool SPBSM weekly seminars

May 2021 "de Sitter vacua in String Theory with fluxes and anti-branes",
XIV International Conference on Interconnections between Particle Physics
and Cosmology

Jan 2021 "Dark Energy in String Theory with a touch of warped throats", BUSSTEPP @50

Dec 2020 "Never have I ever used a constant to fix my problem", Young Theorists Forum 2021

Jun 2020 "Rollin' away from the Swampland", Liverpool SPBSM weekly seminars

Dec 2019 "A Brief History of Causal Sets", Liverpool Student Seminars

Mar 2019 "Causal Set Quantum Gravity: Every Puzzle has its Pieces", MEFT Student Seminars, IST

TEACHING

Teaching Assistant

University of Liverpool

📅 October 2019 – Present 📍 Liverpool, UK

Tutorials, marking assessments, giving feedback

Relativity

Complex Analysis

Vector Calculus

Calculus I and II

Teaching Assistant

Instituto Superior Tecnico, Universidade de Lisboa

📅 September 2018 – February 2019 📍 Lisbon, PT

Problems classes, marking assessments, giving feedback

Mechanics and Waves

OUTREACH

Oct 2022 "*Beginning of Time*", by Simon Devos Epsilon magazine (interview)

Nov 2021 "*Los científicos que creen que el universo no tiene un principio*", by Carlos Serrano for BBC News Mundo (interview)

Oct 2021 "*What if the universe had no beginning?*", by Paul Sutter for LiveScience.com (interview)

2020-2021 "*Metafísica*", science section main writer

Nov 2020 "*Networking in science*", invited speaker at high school event (Lisbon, Portugal)

2014-2017 "*CIRCO da Física*", Science demonstrations section at IST Physics Society (NFIST)
Director for 2016/17 academic year