

# BRUNO VALEIXO BENTO

## RESEARCH EXPERIENCE

### Instituto de Física Teórica

#### UAM-CSIC

📅 October 2023 – Present   📍 Madrid, Spain

#### Postdoctoral researcher

String phenomenology and the swampland programme.

### String Phenomenology and BSM Group

#### University of Liverpool

📅 October 2019 – September 2023   📍 Liverpool, UK

String phenomenology (compactifications, dark energy, 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

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📍 Madrid, Spain  
(Portuguese citizenship)

🔗 Homepage

🔗 inSpire

## REFERENCES

✉ Dr. Susha Parameswaran

susha@liverpool.ac.uk

✉ Dr. Miguel Montero

miguel.montero@csic.es

✉ Dr. Ivonne Zavala

e.i.zavalacarrasco@swansea.ac.uk

✉ Prof. Thomas Van Riet

thomas.vanriet@kuleuven.be

## SOFTWARE



## LANGUAGES

🇬🇧 English	● ● ● ● ●
🇵🇹 Portuguese	● ● ● ● ●
🇪🇸 Spanish	● ● ● ● ●
🇷🇺 Russian	● ● ● ● ●

## REVIEWS

I have peer reviewed paper submissions for EPL and Physical Review D.

## EDUCATION

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### PhD Mathematical Sciences

#### University of Liverpool

📅 October 2019 – September 2023    📍 Liverpool, UK

**Thesis:** *The Gravity of Warped Throats: de Sitter vacua and Gravitational Waves from Type IIB string theory*

**Supervisor:** Susha Parameswaran

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### 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

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### BSc Engineering Physics (Merit)

#### Instituto Superior Tecnico, Universidade de Lisboa

📅 September 2014 – June 2017    📍 Lisboa, Portugal

## PUBLICATIONS

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### "De Sitter vacua — when are 'subleading corrections' really subleading? "

Bruno Valeixo Bento, Dibya Chakraborty, Susha Parameswaran, Ivonne Zavala , *JHEP* 11 (2023) 075

### "A guide to frames, $2\pi$ 's, scales and corrections in string compactifications"

Bruno Valeixo Bento, Dibya Chakraborty, Susha Parameswaran, Ivonne Zavala

### "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

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**Nov 2024**    University of Tokyo, Komaba (1 week)

**May 2024**    CP3-Origins, SDU (1 week)

**Apr 2024**    CERN Theory (3 weeks)

**Mar 2024**    Harvard Swampland Initiative (2 weeks)

**Oct 2022**    *Short Scientific Visits*, International Network on Quantum Fields and Strings

## TALKS

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- Nov 2024** *"de Sitter vaccuming with Casimir energies and Riemann-flat manifolds"*, Dark Universe and the Swampland (IBS, Daejeon)  
*"de Sitter vaccuming with Casimir energies and Riemann-flat manifolds"*, University of Tokyo, Komaba  
*"de Sitter vaccuming with Casimir energies and Riemann-flat manifolds"*, Kavli IPMU, Tokyo
- June 2024** *"Flat manifolds, fluxes & Casimir energies – a recipe for de Sitter?"*, String Phenomenology 2024
- May 2024** *"The Secrets of the Swamp"*, CP3-Origins, SDU
- Mar 2024** *"dS attempts we can really compute (with Casimir potentials and flat manifolds)"*, Swampland Group meeting (Harvard)
- Jan 2024** *"The Curious Case of de Sitter Vacua"*, Iberian Strings 2024 (Porto)
- May 2023** *"Coping with the Swampland: A practical example"*, Liverpool Student Seminars  
*"Putting the Swampland to the test: where's the missing membrane?"*, Liverpool SPBSM weekly seminars
- Mar 2023** *"Gravity at the Tip of the Throat"*, Nottingham Particle Cosmology group seminars
- Jan 2023** *"Gravity at the Tip of the Throat"*, Royal Society meeting  
Probing the quantum origin of spacetime
- 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

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### MSc students

**2024-25** Miquel Salicrú (UAM)  
Nils Marion (ENS Lyon/IFT-UAM)

### Lectures

**July 2019** "Introduction to Gravitation", Astronomy Summer School (NFIST)

### Teaching Assistant

#### University of Liverpool

📅 October 2019 – July 2023 📍 Liverpool, UK  
Tutorials, marking assessments, giving feedback

Relativity

Complex Analysis

Vector Calculus

Calculus I and II

#### Instituto Superior Tecnico, Universidade de Lisboa

📅 September 2018 – February 2019 📍 Lisbon, PT

Problems classes, marking assessments, giving feedback

Mechanics and Waves

## OUTREACH

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**Nov 2024** "La Quintaesencia: ¿El Secreto del Universo Oscuro?", IFT Youtube channel

**Sep 2023** "People Behind Physics", podcast co-host

**Feb 2023** "People Behind Physics", podcast guest

**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