

ZHENGHAO ZHONG

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EMPLOYMENT AND EDUCATION

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| Postdoctoral Research Associate in Mathematical Physics <i>University of Oxford, UK</i> | 2022-current |
| PhD in Theoretical Physics <i>Imperial College London, UK</i> Advisor: Amihay Hanany PhD student representative (2019-2020) | 2018-current |
| Quantum Fields and Fundamental Forces, MSc <i>Imperial College London, UK</i> Distinction, 89% Ranked 3rd in cohort | 2017-2018 |
| Physics with Theoretical Physics, BSc <i>Imperial College London, UK</i> First class honors, 79.2% Dean's list | 2014-2017 |

VISITING

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| Fudan University Shanghai, China | Sep 2020, Jan 2021 |
| Yau Mathematica Science Center, Tsinghua University University Beijing, China | Nov 2020 |

TEACHING EXPERIENCE

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| Differential Equations and Electromagnetism for Second Year Undergraduate Students Tutorial session (5-10 pupil), Imperial College London (64 paid hours) | 2020/2021 Term 2 & 3 |
| Statistics, Thermal Physics and Electromagnetism for Second Year Undergraduate students Tutorial session (5-10 pupil), Imperial College London (76 paid hours) | 2020/2021 Term 1 |
| Optics, Nuclear Physics and Particle Physics Tutorial session (5-10 pupil), Imperial College London (46 paid hours) | 2019/2020 Term 2 & 3 |
| Quantum Mechanics for Second Year Undergraduate Students Tutorial session (5-10 pupil), Imperial College London (30 paid hours) | 2019/2020 Term 1 |
| Calculus, Quantum physics for First Year Undergraduate Students Tutorial session (5-10 pupil), Imperial College London (36 paid hours) | 2018/2019 Term 2 |
| String theory for Masters Students (QFFF) Rapid Feedback (40 pupil), Imperial College London (46 paid hours) | 2018/2019 Term 2 |

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| Secondary School Mathematics (TeamUp) Weekly tutoring (3 pupil), Chelsea Academy (London) (40 volunteered hours) | 2015/2016 |
| Primary School Mathematics (SchoolPlus) Weekly teaching assistant (20 pupil), Larmenier and Sacred Heart (London) (20 volunteered hours) | 2014/2015 |

PUBLICATIONS

(Selected publications in ★)

A. Bourget, J. F. Grimminger, A. Hanany, R. Kalveks, M. Sperling and Z. Zhong, "A Tale of N Cones," [2303.16939]

★ S. Nawata, M. Sperling, H.E Wang and Z. Zhong, "3d $\mathcal{N} = 4$ mirror symmetry with 1-form symmetry," [SciPost Phys. 15 \(2023\) 033](#).

A. Bourget, J. F. Grimminger, A. Hanany and Z. Zhong, "The Hasse diagram of the moduli space of instantons," [JHEP 08 \(2022\) 283](#).

A. Bourget, A. Dancer, J. F. Grimminger, A. Hanany, and Z. Zhong, "Partial implosions and quivers," [JHEP 07 \(2022\) 049](#)

A. Bourget, J. F. Grimminger, A. Hanany, R. Kalveks and Z. Zhong, "Higgs Branches of U/SU Quivers via Brane Locking," [JHEP 08 \(2022\) 061](#).

S. Nawata, M. Sperling, H. E. Wang and Z. Zhong, "Magnetic quivers and line defects – On a duality between 3d $\mathcal{N}=4$ unitary and orthosymplectic quivers," [JHEP 02 \(2022\) 174](#).

M. Sperling and Z. Zhong, "Balanced B and D-type orthosymplectic quivers – Magnetic quivers for product theories," [JHEP 04 \(2022\) 145](#).

A. Bourget, J. F. Grimminger, A. Hanany, R. Kalveks, M. Sperling and Z. Zhong, "Folding Orthosymplectic Quivers," [JHEP 12 \(2021\) 070](#).

A. Bourget, A. Dancer, J. F. Grimminger, A. Hanany, F. Kirwan and Z. Zhong, "Orthosymplectic implosions," [JHEP 08, 012 \(2021\)](#)

A. Bourget, J. F. Grimminger, A. Hanany, M. Sperling and Z. Zhong, "Branes, Quivers, and the Affine Grassmannian," [\[arXiv:2102.06190 \[hep-th\]\]](#).

A. Bourget, S. Giacomelli, J. F. Grimminger, A. Hanany, M. Sperling and Z. Zhong, "S-fold magnetic quivers," [JHEP 02, 054 \(2021\)](#)

★ A. Bourget, J. F. Grimminger, A. Hanany, R. Kalveks, M. Sperling and Z. Zhong, "Magnetic Lattices for Orthosymplectic Quivers," [JHEP 12, 092 \(2020\)](#)

★ A. Bourget, J. F. Grimminger, A. Hanany, M. Sperling, G. Zafrir and Z. Zhong, "Magnetic quivers for rank 1 theories," [JHEP 09, 189 \(2020\)](#)

★ A. Bourget, J. F. Grimminger, A. Hanany, M. Sperling and Z. Zhong, "Magnetic Quivers from Brane Webs with O5 Planes," [JHEP 07, 204 \(2020\)](#)

A. Bourget, S. Cabrera, J. F. Grimminger, A. Hanany and Z. Zhong, “Brane Webs and Magnetic Quivers for SQCD,” [JHEP 03, 176 \(2020\)](#)

★ A. Bourget, S. Cabrera, J. F. Grimminger, A. Hanany, M. Sperling, A. Zajac and Z. Zhong, “The Higgs mechanism — Hasse diagrams for symplectic singularities,” [JHEP 01, 157 \(2020\)](#)

S. Cabrera, A. Hanany and Z. Zhong, “Nilpotent orbits and the Coulomb branch of $T^\sigma(G)$ theories: special orthogonal vs orthogonal gauge group factors,” [JHEP 11, 079 \(2017\)](#)

TALKS AND CONFERENCES

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| (In person) Theory seminars (Invited Talk) Swansea University, UK | May 2023 <i>Higgsing 4d $\mathcal{N} = 2$ SCFTs</i> |
| (In person) QFT seminar (Invited Talk) Korean Institute For Advanced Studies, South Korea | March 2023 <i>Higgsing SCFTs</i> |
| (In person) QFT seminar (Invited Talk) Asia Pacific Center for Theoretical Physics, South Korea | March 2023 <i>Higgsing SCFTs</i> |
| (In person) Strings seminar (Invited Talk) University of Oxford, UK | January 2023 <i>Higgsing SCFTs with 8 supercharges</i> |
| (In person) 5d $\mathcal{N}=1$ SCFTs and Gauge Theories on Brane Webs (Invited Talk) Simons Centre for Geometry and Physics, US | October 2022 <i>Brane Webs, Magnetic Quivers and the art of Locking</i> |
| (In person) Iberian Strings 2022 (Talk) Gijon, Spain | March 2022 <i>3d mirrors of U/SU quivers via brane locking</i> |
| (In person) Fundamental Physics UK (Gongshow + Poster) Kings College, UK | Nov 2021 <i>Higgs branches of U/SU Quivers via Brane Locking</i> |
| (Online) YITP Workshop Strings and Fields 2021 (Talk) Yukawa Institute for Theoretical Physics, Japan | Aug 2021 <i>3d Mirrors of U & SU Quivers</i> |
| (Online) Nankai Symposium on Mathematical Dialogues (Gongshow) Nankai University, China | Aug 2021 <i>Magnetic quivers of 4d and 5d gauge theories</i> |
| (Online) Strings 2021 (Gongshow) ICTP-SAIFR, Brazil [Video link] | Jun 2021 <i>Magnetic quivers and SCFTs</i> |
| (Online) Quiver Meeting (Talk) [Video link] | Jul 2020 <i>Folding and Forking Orthosymplectic Quivers</i> |
| (Online) The 15th KAWS Winter School (Gongshow) Yau Mathematical Sciences Center, China [Video link] | Jan 2021 <i>Magnetic quivers of rank one theories</i> |
| (Online) Iberian Strings 2021 (Talk) Instituto Superior Técnico, Portugal | Jul 2021 <i>5d SCFTs, 5-brane webs and (orthosymplectic) magnetic quivers</i> |

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| (In person) Theory Seminar YMSC (Invited Talk) Yau Mathematical Science Center, Tsinghua University China | Nov 2020 <i>5d SCFTs, 5-brane webs and (orthosymplectic) magnetic quivers</i> |
| (In person) BIMSA Summer Workshop on GLSMs and derived categories (Invited Talk) BIMSA, China | Aug 2020 <i>Quivers with both unitary and special unitary gauge nodes</i> |
| (Online) Quiver Meeting (Talk) [Video link] | Jul 2020 <i>Quivers with both unitary and special unitary gauge nodes</i> |
| (Online) BUSSTEPP @50 (Gongshow) Queen Mary University of London, UK | Feb 2020 <i>SCFTs and Magnetic Quivers</i> |
| (Online) Fundamental Physics UK (Gongshow + Poster) | Jan 2020 <i>SCFTs and Magnetic Quivers</i> |
| Geometry of Quantum Fields and Strings University of Auckland, Newzealand | Jan 2020 |
| XV Avogadro Meeting on Strings, Supergravity and Gauge Theories (Gongshow + Poster) Aula Magna – Via Partenope, Italy | Dec 2019 <i>Higgs Branch and Hasse diagrams</i> |
| 11th Joburg Workshop on String Theory Mandelstam Institute for Theoretical Physics, South Africa | Dec 2019 |
| Workshop on 3D Mirror Symmetry and AGT Conjecture Zhejiang University, China | Oct 2019 |
| Simons Summer Workshop: Cosmology and String Theory Simons Centre for Geometry and Physics, US | Jul 2019 |
| Gauge theories, supergravity and superstrings Centro De Ciencias De Benasque Pedro Pascual, Spain | Jun 2019 |
| IQF 2019 (Gongshow + Poster) Trinity College Dublin, Ireland | May 2019 <i>Fantastic Quivers and How to Compute them</i> |
| Quantum Spacetime '19 Comenius University, Slovakia | Feb 2019 |

OUTREACH ACTIVITIES

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| Virtual PGR symposium Imperial College London | July 2021 <i>How to design a Universe</i> |
| Virtual FoNS Showcase 2020: poster competition Imperial College London | Sept 2020 <i>Brane cosmology and the Big Bang</i> |

3-Minute Thesis Competition - Physics
Imperial College London

Feb 2020
Why String Theory?

Imperial Festival
Outreach event, Imperial College London

June 2019

Book: Particle Physics
Written to get Secondary school students interested in particle physics
Shanghai Singapore International School

2014

Book: A Brief Description of Physics
Written to get Secondary school students interested in modern physics
Shanghai Singapore International School

2011

SKILLS

Organization: Co-organized MITP conference in Mainz (June 2024).
Co-organized Quantum Information journal club (2020-2021)
Languages: Bilingual in English and Chinese
Programming: Mathematica, Python