# Curriculum Vitae


## Christopher Couzens

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Inspire profile


## Positions

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| **Oct 2022-** | Departmental Lecturer, |
| **Present** | **Department of Mathematics, Oxford University** |
| **Oct 2021-** | Postdoctoral Fellow, |
| **Sep 2022** | **Department of Physics, Kyung Hee University** |
| **Oct 2018-** | Postdoctoral Fellow, |
| **Sep 2021** | **Institute of Theoretical physics, Utrecht University** |

## Education

**2015-2018** PhD - King's College London, UK
Supervisor: Dario Martelli
*Thesis: Holographic F-theory*

**2014-2015** MSc in Theoretical Physics - King's College London, UK
Supervisor: Dario Martelli
*Thesis: Supersymmetric solutions of supergravity and G-structure techniques*
*Distinction: Best in cohort*

**2011-2014** BSc in Theoretical Physics - King's College London, UK
Supervisor: Dario Martelli
*First: Best in Cohort*

## Academic Scholarships and Prizes

**2017** Young Investigator Training Program Scholarship
Scholarship award to attend conference and school at GGI with a month long visit to an Italian Research institute, (Milano-Bicocca).

**2015** **MSc Theoretical Physics prize**: Awarded to the best MSc student in theoretical physics.
**MSc Theoretical Physics best project prize**: Awarded to best MSc thesis in theoretical physics.

**2014** **Drew Medal**: Best undergraduate performance in mathematics.
**Jelf Medal**: King's College award for most distinguished student in the College for both academic and sporting prowess. Most prestigious award to an undergraduate.
**MSc continuation grant**: Awarded to excellent students to continue studying for an MSc at KCL (£5000).

**2013** **John Tyrrel Award**: Best second year undergraduate results in mathematics.

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## Talks, Seminars and Presentations

**2024 Apr** **SNU string seminars**: *On the Class S origin of the spindle solutions.*

**2024 Feb** **Quiver Meeting**: *The holographic duals of Argyres–Douglas theories*

**2023 Sep** **Belgian Hep-th Seminars**: The holographic duals of Argyres–Douglas theories: SU, SO and USp

**2023 Sep** **Supergravity 2023**: *The holographic duals of Argyres–Douglas theories: SU, SO and USp*

**2023 Sep** **Trinity College Dublin Seminar series**: *The holographic duals of Argyres–Douglas theories: SU, SO and USp*

**2023 Apr** **Eurostrings**: *The holographic duals of Argyres–Douglas theories: SU, SO and USp*,

**2023 Mar** **Swansea seminar series**: *The holographic duals of Argyres–Douglas theories*,

**2022 Nov** **Oxford seminar series**: *The holographic duals of Argyres–Douglas theories*,

**2022 Aug** **KAIST seminar series**: *Black holes and microstate counting*,

**2022 Apr** **KIAS seminar series**: *Discs, spindles and some SCFT duals*,

**2022 Feb** **IGFAE Santiago de Compostela seminar**: *Discs, spindles and new twists*,

**2022 Jan** **Advances in Theoretical Physics 2022**: *Discs, spindles and defect horizons*,

**2021 Oct** **CQUeST Seminar Series**: *Discs and spindles*,

**2021 Sep** **KAIST-SNU Seminar Series**: *Discs and spindles*,

**2021 Sep** **KIAS String Seminars**: *Black string near-horizons, 2d quiver SCFTs and fractional branes*,

**2021 Jun** **Kyung Hee Journal Club**: *$AdS_3$ solutions, black string chains and $\mathcal{N} = (0,4)$ Quivers*,

**2021 Jun** **Seminar Series on String Phenomenology (Harvard)** : *Anomalies of (0,4) SCFTs from wrapped D3 branes in F-theory*,

**2020 Dec** **Mini-Workshop: Recent Advances in QFT and Geometry** : *Rotating Black hole near-horizons in M-theory*,

**202 Mar** **National Symposium of Theoretical High Energy Physics** : *Extremal Problems in Black Hole Physics*,

**2019 Sep** **Geometry and Strings 2019 (Gong and Poster Presentation)** : *Black Holes and $(0,4)$ SCFTs from Type IIB on K3*,

**2019 Jul** **Strings 2019 (Poster Presentation)** : *A geometric dual of c-extremization and $\mathcal{I}$-extremization*,

**2019 May** **Holography, Generalized Geometry and Duality** : *A geometric dual of c-extremization* ,

**2019 Apr** **Scanning New Horizons** : *Black holes and $(0,4)$ SCFTs from K3*,

**2019 Jan** **Iberian Strings 2019** : *A geometric dual of c-extremization*,

**2018 Oct** **Utrecht Seminar Series** : *A geometric dual of c-extremization*,

**2018 Sep** **Amsterdam seminar series** : *A geometric dual of c-extremization*,

**2018 Apr** **Strings, Geometry and Black Holes, (Gong and Poster Presentation)** : *F-theory and AdS/CFT*,

**2017 Nov** **SISSA seminar series** : *F-theory and Holography in the context of $AdS_3/CFT_2$*,

**2017 Nov** **Padova seminar series** : *F-theory and Holography in the context of $AdS_3/CFT_2$*,

**2017 Oct** **Swansea University seminar series** : *F-theory and $AdS_3/CFT_2$*,

**2017 Oct** **Queen Mary University seminar series** : *F-theory and $AdS_3/CFT_2$*,

**2017 Oct** **City University London seminar series** : *F-theory and $AdS_3/CFT_2$*,

**2017 Jul** **String Geometry, Supersymmetric Theories and Dualities** : *Supersymmetric $AdS_5$ solutions of type IIB without D3-branes*,

**2017 Apr** **Milano Bicocca seminar series** : *F-theory and $AdS_3/CFT_2$*,

**2016 Feb** **Gatis Training Program DESY** : *Supersymmetric $AdS_5$ solutions of type IIB without D3-branes*,

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## Professional Services

**Referee:**

Journal of High Energy Physics, Letters in Mathematical Physics.

**Committees:**

**2024 Mar-Present** MSc admissions committee, Oxford university

**2023 Sep-Present** Early Career Researcher committee, Oxford university.

**2023 Sep-Present** Departmental Teaching committee, Oxford university.

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## Organisational activities

**Conference Organisation:**

Strings and Geometry 2020

**Seminars and Journal clubs**

**2022 Oct-Present** Oxford String Journal Club.

**2021 Sep-2022 Sep** Kyung Hee String Journal Club.

**2019 Sep-2021 Sep** Utrecht String Theory Seminars.

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| **2018 Oct-2019 Sep** | Utrecht String Theory Journal Club. |
| **2015 Oct-2018 Sep** | King's College London PhD Journal Club. |

## Teaching

**2024** **General Relativity 2**
Role: *Lecturer.*
Level: *MSc and 4th-year course.*
University: *Oxford University.*

**2023** **General Relativity 1**
Role: *Lecturer.*
Level: *MSc and 4th-year course.*
University: *Oxford University.*

**2023** **General Relativity 2**
Role: *Lecturer.*
Level: *MSc and 4th-year course.*
University: *Oxford University.*

**2022** **General Relativity 1**
Role: *Lecturer.*
Level: *MSc and 4th-year course.*
University: *Oxford University.*

**2020** **Field theory in particle physics**
Role: *Teaching Assistant.*
Level: *MSc course.*
University: *Utrecht University.*

**2018** **Advanced Quantum Field Theory**
Role: *Teaching Assistant.*
Level: *MSc course.*
University: *King's College London.*

**2018** **Complex Analysis and Partial Differential Equations**
Role: *Teaching Assistant.*
Level: *2nd year undergraduate course.*
University: *King's College London.*

**2017** **Foundations of Mathematical Physics**
Role: *Teaching Assistant.*
Level: *MSc course.*
University: *King's College London.*

**2016** **Quantum Field Theory**
Role: *Teaching Assistant.*
Level: *MSc course.*
University: *King's College London.*

**2015** **Quantum Field Theory**
Role: *Teaching Assistant.*
Level: *MSc course.*
University: *King's College London.*

**2015** **Calculus 2**
Role: *Teaching Assistant.*
Level: *1st Year Undergraduate course.*
University: *King's College London.*

**2014** **All 2nd Year Courses**
Role: *Tutor.*
Level: *2nd year undergraduate courses.*
University: *King's College London.*

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## Supervision

<u>PhD Students</u>:

**2024-Present** **PhD co-supervisor for Tabea Sieper**
Thesis: *Equivariant Localization in supergravity*
University: *Oxford University* .

**2019-2022** **PhD co-supervisor for Koen Stemerdink**
Thesis: *Black holes from branes: various string theoretical constructions*
University: *Utrecht University* .

<u>Masters Students</u>:

**2023-Present** **MSc thesis supervisor for Peter Petkov**
Thesis: *4d $\mathcal{N} = 2$ SCFTs and their holographic duals*
University: *Oxford University.*

**2023-Present** **MSc thesis supervisor for Sid Kumar**
Thesis: *Consistent truncations of GK geometries*
University: *Oxford University.*

**2022-2023** **MSc thesis supervisor for Pratheek Kumar Kishore**
Thesis: *Classification of Supergravity Solutions Admitting AdS Factors*
University: *Oxford University.*

**2020-2021** **MSc thesis supervisor for Oscar Eigenraam**
Thesis: *T-duality and Generalized Complex Geometry*
University: *Utrecht University.*

**Undergraduate Students**:

**2023-Present** **Supervision of UNIQ+ student**
Thesis: *Black hole metrics and Machine learning*
UNIQ+ is a research program for underprivileged undergraduate students to acquire research experience. University: *Utrecht University.*

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## Outreach

**2024** **Oxford Maths Festival volunteer**
Oxford Maths Festival is a public event for the local community encouraging engagement of all ages in mathematics.

**2024** **Mathematics institute outreach**
Wrote an article explaining my recent research along with a minute elevator pitch aimed at non-experts.

**2023** **School science talk**
Gave a talk on special and general relativity to sixth form students (final school year) followed by a discussion session for students interested in studying maths and physics at university.

**2023** **Supervision of UNIQ+ intern**
UNIQ+ is a program for giving underprivileged undergraduate students research experience.

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## Publications

All papers can be downloaded as pdf files, along with citation data, from my Inspire profile.


[1] C. Couzens and A. Lüscher, *A geometric dual of F-maximization in massive type IIA*, 2406.15547.

[2] P. Bomans and C. Couzens, *On the Class $\mathcal{S}$ Origin of Spindle Solutions*, 2404.08083.

[3] C. Couzens, M. J. Kang, C. Lawrie and Y. Lee, *Holographic duals of Higgsed $\mathcal{D}_p^b(BCD)$*, 2312.12503.

[4] P. Bomans, C. Couzens, Y. Lee and S. Ning, *Symmetry breaking and consistent truncations from M5-branes wrapping a disc*, *JHEP* **01** (2024) 088, [2308.08616].

[5] C. Couzens, H. Kim, N. Kim, Y. Lee and M. Suh, *D4-branes wrapped on four-dimensional orbifolds through consistent truncation*, *JHEP* **02** (2023) 025, [2210.15695].

[6] C. Couzens, N. T. Macpherson and A. Passias, *A plethora of Type IIA embeddings for d = 5 minimal supergravity*, *JHEP* **01** (2023) 047, [2209.15540].

[7] C. Couzens and K. Stemerdink, *Universal spindles: D2's on $\Sigma$ and M5's on $\Sigma \times \mathbb{H}^3$*, 2207.06449.

[8] C. Couzens, H. Kim, N. Kim and Y. Lee, *Holographic duals of M5-branes on an irregularly punctured sphere*, *JHEP* **07** (2022) 102, [2204.13537].

[9] C. Couzens, N. T. Macpherson and A. Passias, *On Type IIA $AdS_3$ solutions and massive GK geometries*, *JHEP* **08** (2022) 095, [2203.09532].

[10] C. Couzens, *A tale of (M)2 twists*, *JHEP* **03** (2022) 078, [2112.04462].

[11] C. Couzens, K. Stemerdink and D. van de Heisteeg, *M2-branes on discs and multi-charged spindles*, *JHEP* **04** (2022) 107, [2110.00571].

[12] C. Couzens, Y. Lozano, N. Petri and S. Vandoren, *N=(0,4) black string chains*, *Phys. Rev. D* **105** (2022) 086015, [2109.10413].

[13] C. Couzens, N. T. Macpherson and A. Passias, *$\mathcal{N}$ = (2, 2) $AdS_3$ from D3-branes wrapped on Riemann surfaces*, *JHEP* **02** (2022) 189, [2107.13562].

[14] C. Couzens, E. Marcus, K. Stemerdink and D. van de Heisteeg, *The near-horizon geometry of supersymmetric rotating $AdS_4$ black holes in M-theory*, *JHEP* **05** (2021) 194, [2011.07071].

[15] C. Couzens, H. het Lam, K. Mayer and S. Vandoren, *Anomalies of (0,4) SCFTs from F-theory*, *JHEP* **08** (2020) 060, [2006.07380].

[16] C. Couzens, H. het Lam and K. Mayer, *Twisted $\mathcal{N}$ = 1 SCFTs and their $AdS_3$ duals*, *JHEP* **03** (2020) 032, [1912.07605].

[17] C. Couzens, *$\mathcal{N}$ = (0, 2) $AdS_3$ solutions of type IIB and F-theory with generic fluxes*, *JHEP* **04** (2021) 038, [1911.04439].

[18] C. Couzens, H. het Lam, K. Mayer and S. Vandoren, *Black Holes and (0,4) SCFTs from Type IIB on K3*, *JHEP* **08** (2019) 043, [1904.05361].

[19] C. Couzens, J. P. Gauntlett, D. Martelli and J. Sparks, *A geometric dual of c-extremization*, *JHEP* **01** (2019) 212, [1810.11026].

[20] C. Couzens, D. Martelli and S. Schafer-Nameki, *F-theory and $AdS_3/CFT_2$ (2, 0)*, *JHEP* **06** (2018) 008, [1712.07631].

[21] C. Couzens, C. Lawrie, D. Martelli, S. Schafer-Nameki and J.-M. Wong, *F-theory and $AdS_3/CFT_2$*, *JHEP* **08** (2017) 043, [1705.04679].

[22] C. Couzens, *Supersymmetric $AdS_5$ solutions of type IIB supergravity without D3 branes*, *JHEP* **01** (2017) 041, [1609.05039].