# Aleksander Doan

E-MAIL a.doan@ucl.ac.uk WEBSITE http://www.homepages.ucl.ac.uk/~ucahoan

## EMPLOYMENT

2022—	${\bf University} \ {\bf College} \ {\bf London}, \ {\rm Lecturer} \ ({\rm Assistant} \ {\rm Professor}) \ {\rm in} \ {\rm Pure} \ {\rm Mathematics}$
2019—	University of Cambridge, Junior Research Fellow of Trinity College
2019 - 2022	Columbia University, Simons Society Junior Fellow

#### EDUCATION

2014 - 2019	Stony Brook University, PhD in Mathematics (Advisor: Simon Donaldson)
2013 - 2014	University of Cambridge, Part III of the Mathematical Tripos
2009—2013	University of Warsaw, BA in Mathematics

### GRANTS

2021 National Science Foundation grant DMS-2104919 (\$158,856)

## AWARDS, FELLOWSHIPS, OTHER FUNDING

2024	Isaac Newton Institute funding: UK Differential Geometry Network (with H. Nguyen)
2024	MATH+ Visiting Scholar, Humboldt-Universität zu Berlin
2023	Visiting Scholar, University of Science and Technology of China
2022	Research Member, Simons–Laufer Mathematical Sciences Institute, Berkeley
2019—	Junior Research Fellowship, Trinity College, University of Cambridge
2019 - 2022	Simons Society Junior Fellowship
2019	Stony Brook University President's Award to Distinguished Doctoral Students
2019	Department Award for Outstanding Research by a PhD Student, Stony Brook University
2017 - 2019	Funded by the Simons Collaboration on Special Holonomy
2013-2014	Trinity College Studentship in Mathematics, University of Cambridge

## PAPERS

2024	Chambered invariants of real Cauchy–Riemann operators
	with T. Walpuski, arXiv:2410.21057
2023	Equivariant Brill–Noether theory for elliptic operators and super-rigidity with T. Walpuski, <i>Forum of Mathematics, Sigma</i> , 11, E3 (2023)
2023	Counting embedded curves in symplectic 6-manifolds with T. Walpuski, <i>Commentarii Mathematici Helvetici</i> 98 (2023), no. 4

PAPERS (CONTINUED)

2022	Holomorphic Floer theory and the Fueter equation with S. Rezchikov, arXiv:2210.12047
2021	The Gopakumar–Vafa finiteness conjecture with E. Ionel, T. Walpuski, arXiv:2103.08221
2021	Castelnuovo's bound and rigidity in almost complex geometry with T. Walpuski, <i>Advances in Mathematics</i> , 379 (2021)
2021	On the existence of harmonic $\mathbb{Z}/2$ spinors with T. Walpuski, <i>Journal of Differential Geometry</i> , 117(3): 395-449 (2021)
2020	Deformation theory of the blown-up Seiberg–Witten equation in dimension three with T. Walpuski, <i>Selecta Mathematica</i> , 26, 48 (2020)
2019	On counting associative submanifolds and Seiberg–Witten monopoles with T. Walpuski, <i>Pure and Applied Mathematics Quarterly</i> , 15.4 (2019)
2019	Seiberg–Witten monopoles with multiple spinors on a surface times a circle Journal of Topology, 12 (2019), No. 1, 1–55
2018	Adiabatic limits and Kazdan–Warner equations

Calculus of Variations and PDE, 57:124 (2018)

### INVITED TALKS

#### CONFERENCES

- 2024 Special Riemannian Geometries in Dimensions 6, 7, 8, CRM Montréal
- 2023 Symplectic Geometry, Low Dimensional Topology, and Quantum Fields, University of Oxford
- 2023 Pacific Rim Complex and Symplectic Geometry Conference, Lishui, Hefei
- 2023 Symplectic Topology Workshop, Imperial College London
- 2022 New Four-Dimensional Gauge Theories, SL Mathematical Sciences Institute, Berkeley
- 2021 Rutgers Geometric Analysis Conference, Rutgers University
- 2020 Oxford-London Gauge Theory Assembly, University of Oxford
- 2020 Geometry and Analysis of Moduli Spaces, Imperial College London
- 2019 Novel Vistas on Vortices, Simons Center
- 2019 Third Annual Meeting of the Simons Collaboration on Special Holonomy, New York
- 2018 Special Metrics and Gauge Theory, Instituto de Ciencias Matemáticas, Madrid
- 2018 Gauge Theory and Special Holonomy, Imperial College London
- 2017 Special Holonomy: Progress and Open Problems, Simons Center
- 2017 Gauge Equations, Geometry, and Strings, Instituto de Ciencias Matemáticas, Madrid
- 2016 Recent Developments in the Mathematical Study of Gauge Theory, Simons Center

SELECTED SEMINARS AND COLLOQUIA

- 2024 Humboldt University, Columbia University, University of Oxford, Imperial College London
- 2023 University of Cambridge, King's College London, University of Southampton (colloquium), University of York, University of Edinburgh, Trinity College Cambridge
- 2022 Institute for Advanced Study, Stanford University, University of Wisconsin, Michigan State University (colloquium), University of S California (colloquium), Rutgers University (colloquium)

## INVITED TALKS (CONTINUED)

2021	Fields Institute, University of Oregon, Columbia University, Texas A&M University, UC Santa Barbara, University of Chicago, Western Hemisphere Symplectic Seminar
2020	Stanford University, University of Chicago, Institute for Advanced Study, Michigan State Univ.
2019	Duke University, Massachusetts Institute of Technology , Columbia University, Peking University, National Cheng Kung University (colloquium), Rutgers University, University of Rochester
2018	Princeton University, Harvard University, Stanford University, UC Berkeley, Brandeis University, City University of New York, Michigan State University
2017	Massachusetts Institute of Technology, Duke University, Stony Brook University, Institute of Mathematical Sciences Hong Kong

#### TEACHING

2024	Measure Theory, University College London
2024	Mathematical Methods 3 (tutorials), University College London
2023	Mathematics for Science 2, University College London
2023	Mathematical Methods 1 & 2 (tutorials), University College London
2023	Part II Geometry (tutorials), University of Cambridge
2023	$Gauge\ Theory\ (graduate\ summer\ course),$ Chinese University of Science and Technology
2022—	Topics in Geometry (one of several lecturers), LSGNT PhD programme
2022	Mathematics for Science 2, University College London
2022	Analysis 1 (tutorials), University College London
2021	Ordinary Differential Equations, Columbia University
2019	Gauge Theory (graduate summer course), Peking University
2014 - 2019	Calculus 1 & 2, Analysis 1, History of Mathematics (tutorials), Stony Brook University

### STUDENTS

2023—	Elvar Wang Atlason (PhD)
2023—	Brad Wilson (PhD)
2021—	Emily Windes (PhD, coadvised with Boris Botvinnik)
2024—	Xander Povey (PhD first year project)
2024—	Yichen Zhang (PhD first year project)
2023 - 2024	Maartje Wisse (PhD first year project)
2024—	Chris Srsen (MSci)
2023-2024	Clementina Saggini (MSci)

## DEPARTMENTAL ROLES

- 2024— Organizer of the UCL Geometry Seminar
- 2024— Organizer of the Brussels–London Geometry Seminar
- 2024— Organizer of the Geometry Reading Seminar for PhD students
- 2023— Admissions for the PhD program London School of Geometry and Number Theory
- 2023— Member of the research committee

# DEPARTMENTAL ROLES (CONTINUED)

2024	Designed new courses $\mathit{Manifolds}$ and $\mathit{Riemann}\ \mathit{Surfaces}$ to launch in $2025/26$
2023—	Member of the workgroup for redesigning geometry curriculum

## SERVICE

2024	Scientific committee of the Geometry & Topology Conference, Qingtian
2024—	Mentor for the In2research programme for undergraduate students
2022—	PhD student mentoring programme, Trinity College, University of Cambridge
2022	US National Science Foundation grant panel
2022	Organizer of Introductory Workshop on Gauge Theory, SLMATH Berkeley
2020	Organizer of Geometry and Analysis of Moduli Spaces, Imperial College London
2019 - 2023	Governing Body of Trinity College, University of Cambridge