

Personal details

Personal details

First / given name Daniel
Second given name
Third given name
Surname/family name Naylor
Date of birth 19 February 2003
Preferred first/given name Daniel
Previous surname
Country of birth United Kingdom
Legal nationality British National
Dual nationality
Country of residence United Kingdom
Have you previously studied with us at the University of Bristol? No

Contact details

Home address

Please provide your permanent residential address. If you have another address and would prefer for us to contact you at that address instead you have the opportunity to add a correspondence address in the next section.

Country United Kingdom
Postcode OX1 5RW
Address Line 1 43A Sandford Lane
Address Line 2 Kennington
City Oxford
County Oxfordshire
Telephone

If you would like us to send any postal correspondence to an address which is not your home address please enter an alternative address here. If you want us to send correspondence to your home address then please select No.

Do you want to add a correspondence address? No
Country United Kingdom
Postcode OX1 5RW
Address Line 1 43A Sandford Lane
Address Line 2 Kennington
City Oxford
County Oxfordshire
Telephone

Agent

Agent details

Agency Name
Email address

Other information

Additional Documents

Please upload required documents as outlined in your admissions statement

Mode of study

How would like to study this Full Time
programme?

Qualifications

Qualifications

Institution	Qualification	Type	Subject	Actual/predicted	Grade	Start date	End date
University of Cambridge	Master's Degree (PG)	Academic Qualification	Mathematics	Predicted	Distinction	01/Oct/2021	30/Jun/2025

If these qualifications have altered since your last application please note the changes in the free text box here.

English Language

Is English your first language? Yes

What is your first language?

Did you study at school/university where you were taught in English?

For how many years?

Have you sat a relevant English language test?

TOEFL (internet-based)

Registration number

Date of TOEFL test

TOEFL reading score

TOEFL listening score

TOEFL speaking score

TOEFL writing score

TOEFL total score

IELTS (International English Language Testing System)

Test report form (TRF) number

UKVI number (if applicable)

Date of IELTS test

IELTS listening score

IELTS reading score

IELTS writing score

IELTS speaking score

IELTS total score

Pearson Test of English

Score report code

Date of Pearson test

Pearson listening score

Pearson reading score

Pearson speaking score

Pearson writing score

Pearson overall score

Other English Language test

Name of course

Registration number

Date of test

Listening score

Writing score

Reading score

Total score

Experience

Current Employer

Employer name and address Crimson Education 10 York Road London SE1 7ND United Kingdom

Job title and main duties Tutor One-on-one tutoring to prepare students for university entrance exams (TMUA and MAT).

Full time/Part time Part time

Date of Appointment 01 April 2023

End date (if applicable)

Previous employment 1

Employer name and address

Job title and main duties

Full time/Part time

Date of Appointment

End date (if applicable)

Previous employment 2

Employer name and address

Job title and main duties

Full time/Part time

Date of Appointment

End date (if applicable)

Previous employment 3

Employer name and address

Job title and main duties

Full time/Part time

Date of Appointment

End date (if applicable)

Other Experience

Do you have any other relevant work experience to support your application? No

Please provide details

Personal statement

Personal details

Do you have a personal statement to upload? No

Please type your personal statement in the box I am interested in pursuing a PhD in Combinatorics in the hope that I can work in academia afterward. I have been particularly interested in Extremal Combinatorics and Ramsey Theory, although I am not sure what I want to fully commit to yet because I would like to find out more about Combinatorics in general. I struggled to decide which of Combinatorics, Number Theory, and Foundations I would like to pursue a PhD in. I chose to study Combinatorics because I have enjoyed working on example problems from Combinatorics courses the most, and because I have felt drawn towards spending more time on my Combinatorics courses than others (but not to the point of neglecting other courses). I think this is because the questions involved mathematical objects that seem very natural to me. For example, graphs, abelian groups, and colourings feel very natural to me compared to the definitions of local fields, regular categories, and chain complexes. I have particularly enjoyed working on starred questions from Combinatorics example sheets. When working on some of these problems, I had no idea how likely I was to succeed in solving the problem. This made them feel rewarding to solve, and even more so when they took me a very long time. I want to train to work on research-level problems in Combinatorics because I hope that I will find any progress that I make to be even more rewarding and interesting.

Research proposal

Research proposal

Proposed supervisor 1 Dr David C Ellis

Proposed supervisor 1

Proposed project title Extremal Combinatorics
(max 150 chars)

Passport and visa

Visa required

Do you require a visa to study in the UK? No

Please fill out your passport details below. If you are unable to provide these at the current time you will have another opportunity to upload your passport after you submit the form. If you do not provide us with this information we will be unable to issue you with your confirmation of acceptance number and you will be unable to obtain a visa.

Passport details

Passport number

Further details

Have you previously studied in the UK?

What was the highest level of study in the UK?

Please confirm the total length of your UK study in years

Referees

Referee 1

Do you have a reference to upload? No

Type of reference Academic

Referee title Professor

Forename Jack

Surname Thorne

Position Professor of Number Theory

Institution/Company University of Cambridge

Email address jat58@cam.ac.uk

Country United Kingdom

Referee 2

Do you have a second reference to upload? No

Type of reference Academic

Referee title Professor

Forename Imre

Surname Leader

Position Professor of Pure Mathematics

Institution/Company University of Cambridge

Email address ibl10@cam.ac.uk

Country United Kingdom

Funding

Funding 1

What is your likely source of funding? University of Bristol scholarship

Please give the name of your scholarship or Studentship
Please specify

Percentage from this source 100

Is this funding already secured? No

Funding 2

What is your likely source of funding?

Please give the name of your scholarship or Studentship
Please specify

Percentage from this source

Is this funding already secured?

Funding 3

What is your likely source of funding?

Please give the name of your scholarship or Studentship
Please specify

Percentage from this source

Is this funding already secured?

Other funding

I would like to be considered for other funding opportunities Yes

Documents

Document type	File name
Application form PDF (anonymised)	Anon 2757111~01~01.pdf
Transcript	Digitary Transcript.pdf
Research proposal	research_statement.pdf
Curriculum vitae	CV.pdf

By ticking the checkbox below and submitting your completed online application form, you acknowledge the University of Bristol will use the information provided from time to time, along with any further information about you the University may hold, for the purposes set out in the [University's full Data Protection Statement](#). Applicants applying to the collaborative programmes of doctoral training should also read the [Data Protection Statement](#) for collaborative programmes of doctoral training.

The information that you provided on your application form will be used for the following purposes:

- To enable your application for entry to be considered and allow our Admissions Advisors, where applicable, to assist you through the application process;
- To enable the University to compile statistics, or to assist other organisations to do so. No statistical information will be published that would identify you personally;
- To enable the University to initiate your student record should you be offered a place at the University.

All applicants should note that the University reserves the right to make without notice changes in regulations, courses, fees etc at any time before or after a candidate's admission. Admission to the University is subject to the requirement that the candidate will comply with the University's registration procedure and will duly observe the Charter, Statutes, Ordinances and Regulations from time to time in force.

By ticking the checkbox below and submitting your completed online application form, you are confirming that the information given in this form is true, complete and accurate and that no information requested or other material information has been omitted. You are also confirming that you have read the Data Protection Statement and you confirm the statement below.

I can confirm that the information I have provided is true, complete and accurate. I accept that the information given in my application will be stored and processed by the University of Bristol, in accordance with the *UK General Data Protection Regulation and Data Protection Act 2018*, in order to:

- Consider my application and operate an effective and impartial admissions process;
- Monitor the University's applicant and student profile;
- Comply with all laws and regulations;
- Ensure the wellbeing and security of all students and staff;
- If my application is successful to form the basis of the statement made within my application.

If the University of Bristol discovers that I have made a false statement or omitted significant information from my application, for example examination results, I understand that it may have to withdraw or amend its offer or terminate my registration, according to circumstances.

Education

Currently studying Part III of the Mathematical Tripos at the University of Cambridge.
Achieved a First in third year with a mark of 85/100 and ranking of 12/218.

Relevant Courses

Combinatorics courses:

- Combinatorics; Ramsey Theory; Introduction to Additive Combinatorics (fourth year)
- Entropy Methods in Combinatorics (fourth year, but not yet studied)
- Graph Theory (third year)

Other courses:

- Diophantine Analysis; Logic and Computability (fourth year)
- Galois Theory; Number Theory; Probability and Measure; Representation Theory; Logic and Set Theory; Number Fields; Topics in Analysis (third year)
- Analysis and Topology; Linear Algebra; Markov Chains; Complex Analysis; Groups, Rings and Modules; Geometry (second year)
- Groups; Numbers and Sets; Analysis; Probability (first year)

Work Experience

Since April 2023, I have been doing one-on-one TMUA and MAT tutoring for Crimson Education.

I have strongly enjoyed all of the Combinatorics courses that I have studied so far, so I would like to spend time continuing to investigate different areas before deciding on my exact research. Since I don't yet know what research in Combinatorics is like, I will use this space to write about the parts of learning Combinatorics I have enjoyed the most so far.

In my fourth-year Combinatorics course, I liked seeing how versatile the technique of 'compressions' is. It reminded me of how Professor Leader lectured the third-year Graph Theory course. In the lectures, lots of the proofs were phrased using at least one clever WLOG argument. I found these clever WLOG arguments (including compressions) very interesting, and I would like to improve my skills in coming up with them.

In the Ramsey Theory course that I studied this year, one of my favourite moments of the course was when we saw how ultrafilters could be used to prove Hindman's theorem. There was a question about finite sets on the example sheet that we were expected to solve using Hindman's theorem. This question was one of my favourites because I found the proof method astonishing: I found it very surprising that ultrafilters could be relevant to a proof of a statement about finite sets. This problem has made me interested in pursuing research in an area where I can use surprisingly sophisticated mathematical concepts to prove simple-sounding statements about finite objects.

Another similar example that I found very interesting was the proof of the "edge-isoperimetric inequality in the grid" that was lectured in the Combinatorics course. I found it very interesting that the result could be proved by proving on a continuous version and then taking a discrete approximation. I would certainly find it interesting to see more examples of interactions between continuous and discrete problems.

INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

Surname	Naylor
Forenames	Daniel
Date of Birth	19 February 2003
Unique student number	305343161
HESA unique student identifier	2111143431612

DEGREES AWARDED

No degree awarded.

INFORMATION IDENTIFYING THE QUALIFICATION(S)

Name and status of awarding institution	University of Cambridge
College	Trinity College
Name of Qualification	MMath & BA Degrees
Level of Qualification	Undergraduate (Full-Time)
Main field(s) of study for the qualification	Mathematical Tripos
Official Length of Programme	Four Years
Course Start Date	Michaelmas Term 2021 (01 October 2021)
Language of Instruction and Examination	English

ACADEMIC RECORD

(*) denotes no marks recorded for this unit

Overall result for the degree of Bachelor of Arts: Class I

For information on how the overall degree result is calculated please refer to website
<https://www.camdata.admin.cam.ac.uk/degree-classes>

EASTER TERM 2022

Mathematical Tripos, Part IA

Result : Class I

Overall Mark : 85/100

The examination included the following components:	Result
1 : Paper 1	*
2 : Paper 2	*
3 : Paper 3	*
4 : Paper 4	*

Grade Boundaries:	Result
Class I/Class II, division i	70
Class II, division i/Class II, division ii	60
Class II, division ii/Class III	50
Class III/Fail	40
The examinations for the Mathematical Tripos cover all subjects in combined papers and are not modular. It is not possible to give comparable marks for individual subjects. The transcript percentage is calculated by suitable scaling from the overall merit mark total: it represents the student's achievement across all subjects taken in the relevant year.	

EASTER TERM 2023

Mathematical Tripos, Part IB

Result : Class I

Overall Mark : 77/100

The examination included the following components:	Result
CP : Computational Project	*
1 : Paper 1	*
2 : Paper 2	*
3 : Paper 3	*
4 : Paper 4	*

Grade Boundaries:	Result
Class I/Class II, division i	70
Class II, division i/Class II, division ii	60
Class II, division ii/Class III	50
Class III	40
The examinations for the Mathematical Tripos cover all subjects in combined papers and are not modular. It is not possible to give comparable marks for individual subjects. The transcript percentage is calculated by suitable scaling from the overall merit mark total: it represents the student's achievement across all subjects taken in the relevant year.	

EASTER TERM 2024

Mathematical Tripos, Part II

Result : Class I

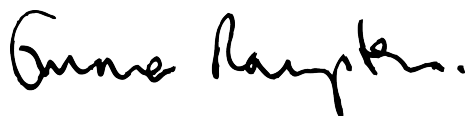
Overall Mark : 85/100

The examination included the following components:	Result
CP : Computational Project	*
1 : Paper 1	*
2 : Paper 2	*
3 : Paper 3	*
4 : Paper 4	*

Grade Boundaries:	Result
Class I/Class II, division i	70
Class II, division i/Class II, division ii	60
Class II, division ii/Class III	50
Class III	40
<p>The examinations for the Mathematical Tripos cover all subjects in combined papers and are not modular. It is not possible to give comparable marks for individual subjects. The transcript percentage is calculated by suitable scaling from the overall merit mark total: it represents the student's achievement across all subjects taken in the relevant year.</p>	

CERTIFICATION OF THE DOCUMENT

Signature



Date: 04-December-2024

Title of Office: Registry

FURTHER INFORMATION

For further information please refer to the programme specification at

<http://www.admin.cam.ac.uk/univ/camdata/archive.html>

Where available, this will contain information on:

- Access Requirements
- Professional Status
- Programme Requirements
- Grading Schemes and Degree Classification
- Access to further study

INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

Programme specifications as found on : <http://www.admin.cam.ac.uk/univ/camdata/archive.html> for all courses include an indication of the level of the course in the context of the *Framework for Higher Education Qualification in England, Wales and Northern Ireland* , published by the Quality Assurance Agency (QAA). Full descriptors of the levels of the *Framework* can be viewed on the QAA website : <http://www.qaa.ac.uk/quality-code>

DANIEL NAYLOR

Daniel Naylor is currently a 4th-year student at Trinity College Cambridge, doing Part III, which is the one-year taught Master's in mathematics. I have supervised him for several courses during his time here.

Daniel is a superb student. He is always right on top of the material, and he has a very nice creative streak when it comes to the hard problems. Actually, while he was already excellent during his first and second years, he really 'exploded into life' in the third year, where suddenly he was one of the absolute best in his year. He had an especial knack for Graph Theory and for Logic. Interestingly, another supervisor commented to me that Daniel was one of 'only two students in the year who really *get* this course' for that course. And he has continued in this vein during this year. For my course, Combinatorics, I set the students three very challenging problems. Nobody solved all three of them, but Daniel was one of only three students to solve two of the questions. This is a very good indicator of future research potential.

Daniel has achieved a high First in each of his three years. He came 17th in the first year (out of 68 Firsts and 230 candidates altogether), then 35th in the second year, and then 12th in the third year. He is sure to obtain a Distinction (the highest grade) in Part III.

I would expect Daniel to excel in a PhD. His depth of thinking and his originality, allied with his great interest, make me confident he will do very well. So I recommend him very strongly indeed.

Imre Leader
Professor of Pure Mathematics
University of Cambridge
January 4th 2025



UNIVERSITY OF
CAMBRIDGE

Department of Pure Mathematics &
Mathematical Statistics

Jack Thorne FRS
Kuwait Professor of
Number Theory & Algebra

January 2, 2025

Dear colleagues,

I am writing to recommend Daniel Naylor for admission to your PhD programme in mathematics. Daniel has been studying mathematics as an undergraduate at Trinity College in the University of Cambridge since 2021, and will graduate at the end of this year with an MMath, following his completion of Part III. I am Daniel's Director of Studies at Trinity College, which means that I have met with Daniel regularly during his time here in order to discuss his course selection and his supervision reports. I have also supervised (taught in small groups of 1–2 students) him in several courses.

Daniel's track record during his time in Cambridge has been excellent. He has studied a wide range of courses, covering the whole spectrum of pure mathematics, and his work has been consistently at a very high level, as reflected in both his supervision reports and his exam results. I supervised Daniel during the 2023–24 academic year in both the Number Theory (covering quadratic forms, quadratic reciprocity etc.) and Number Fields (covering algebraic integers, Minkowski's Theorem, the finiteness of the ideal class group, etc.) courses, and my experience was that Daniel's written work was always excellent, with well-written solutions to almost all questions on each problem sheet. His supervisors in other subjects reported a similar experience.

His end-of-year exam results have likewise been outstanding, with Daniel receiving a First in every year and, in the most recent 3rd year exams, being ranked in the top 5% of his cohort of about 230 students studying mathematics. In particular, Daniel was the only student in his year to get a perfect score in Number Fields, despite the high level of conceptual difficulty of this course.

During his time as an undergraduate, Daniel has developed an interest in Combinatorics, and this indeed seems to be a particular strength of his: Daniel's supervisor in Graph Theory last year reported that "he seems to have a real affinity for the course, and has produced fabulous work, solving some highly non-trivial problems with some very elegant and attractive arguments. He has been very impressive indeed this term, both in terms of his written work and in terms of how he is able to come up with ideas in real time in the supervisions". During his Part III year, Daniel is focusing on courses in combinatorics, including Combinatorics, Ramsey Theory, and Additive Combinatorics. By the end of this year, he will be very well-prepared to begin research in the subject, and given his outstanding

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Cambridge CB3 0WB
Tel: +44 (0) 1223 337987
Email: thorne@dpmms.cam.ac.uk
www.dpmms.cam.ac.uk

track record so far, I see every reason to expect that he will continue to excel as a PhD student. I am happy to give him my very strong recommendation.

Yours sincerely,

Jack Thorne