Personal details

Personal details

First / given name	Naomi
Second given name	
Third given name	
Surname/family name	Bazlov
Date of birth	03 January 2003
Preferred first/given name	Naomi
Previous surname	
Country of birth	Israel
Legal nationality	British National
Dual nationality	Israeli
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	B15 3PE
Address Line 1	8 Rodman Close
Address Line 2	
City	Birmingham
County	
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	B15 3PE
Address Line 1	8 Rodman Close
Address Line 2	
City	Birmingham
County	
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 programme?	Full Time

Qualifications

Qualifications

Institution	Qualification	Type	Subject	Actual/predicted	Grade	Start date	End date
University of Cambridge, UK	First degree BA/BSC etc	Academic Qualification	Mathematics	Actual	2.1	06/Oct/2020	20/Oct/2023
University of Warwick	Master's Degree (PG)	Academic Qualification	Mathematics	Predicted	Distinction	02/Oct/2023	20/Jan/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
Job title and main duties
Full time/Part time
Date of Appointment
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?
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 have outlined my academic and research experience to date in my research statement and CV. As such, I feel that a further personal statement is not necessary.

Research proposal

Research proposal

Proposed supervisor 1	Professor Tim Dokchitser
Proposed supervisor 1	Dr Celine Maistret
Proposed project title (max 150 chars)	Topics in algebraic and analytic number theory

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	Dr
Forename	Simon
Surname	Myerson
Position	Assistant Professor
Institution/Company	University of Warwick
Email address	simon.rydin-myerson@warwick.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
Institution/Company	University of Cambridge
Email address	i.leader@dpmms.cam.ac.uk
Country	United Kingdom

Funding

Funding 1

What is your likely source of funding?	Engineering and Physical Sciences Research Council
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?	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 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

Submission

Documents

Document type	File name
Curriculum vitae	Naomi-CV-2023.pdf
Research proposal	research-statement.pdf
Transcript	Bazlov, Naomi (College Transcript)_12-09-2023_231223_121928.pdf
Degree certificate	NBazlov-degree-certificate.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 signification 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.

Naomi Bazlov

naomi.bazlov@warwick.ac.uk

Education

2023 – to date	**University of Warwick, MSc Mathematics (completion October 2024)**
2020 – 2023	**Trinity College, University of Cambridge, BA Mathematics**
2013 – 2020	**King Edward VI High School for Girls (KEHS), Birmingham, UK**

Examinations taken

06/2023	**Part II of Cambridge Mathematics Tripos.** Result: 2.1
06/2022	**Part IB of Cambridge Mathematics Tripos.** Result: 2.1
06/2021	**Part IA of Cambridge Mathematics Tripos.** Result: First class
06/2020	**STEP II – Grade S, STEP III – Grade S** (Highest grade)
2020	**A Levels** Mathematics – A*, Further Maths – A*, Physics A*, Music A*, French A*

Courses and seminars attended at Warwick

All year	MSc Dissertation: 'Moments of Representation Numbers' (in progress) supervised by Dr Simon Myerson
Spring 2024	Elliptic Curves; Modular Forms; Algebraic Curves; Ring Theory.
Autumn 2023	Analytic Number Theory; Lie Algebras; Algebraic Geometry; Commutative Algebra.
Seminars attended	Junior Number Theory Seminar; Number Theory, Algebraic Geometry Seminars.

Courses and seminars at the Hebrew University of Jerusalem

07/2023	As part of the summer school, I took a course (12 lectures) on induced subgraphs and structural graph theory, by Professor Maria Chudnovsky.
06/2023	Attended Discrete Mathematics seminar.

Undergraduate lecture courses taken at Cambridge

Part II Lent	Logic & Set Theory; Number Fields; Analysis of Functions; Coding and Cryptography
II Michaelmas	Linear Analysis; Probability and Measure; Representation Theory; Number Theory; Galois Theory
Part IB Lent	Groups, Rings and Modules; Complex Analysis; Geometry; Numerical Analysis; Fluid Dynamics; Statistics
IB Michaelmas	Linear Algebra; Analysis & Topology; Markov Chains; Methods; Quantum Mechanics
Part IA	Numbers and Sets; Groups; Analysis; Probability; Variational Principles; Vectors and Matrices; Differential Equations; Dynamics and Relativity; Vector Calculus

Academic Achievements and Prizes

06/2023	**Scholarship from Hebrew University of Jerusalem** to attend the Research Experience for Undergraduates summer programme.
07/2022	**Scholarship from Trinity Summer Studentship Scheme** to complete project on Unfriendly Partitions under supervision of Professor Imre Leader.
07/2021	**Junior Scholar of Trinity College, Cambridge** Awarded for a Class I result in examinations.
04/2020	**European Girls' Mathematical Olympiad**. Netherlands, Egmond aan Zee (moved online). Represented the UK in a team of 4 girls. Silver medal.
02/2020	**British Mathematical Olympiad**. Ranked 11th across the UK in the final round of BMO (about 100 participants, top scorers of round 1).
04/2019	**European Girls' Mathematical Olympiad**. Ukraine, Kyiv. Represented the UK in a team of 4 girls. Silver medal.
02/2019	**Romanian Master of Mathematics**. Romania, Bucharest. Represented the UK in a team of 6. Honourable Mention.
2011-2020	Multiple awards in UKMT maths competitions, invitations to olympiad training camps in Oxford, Budapest and Cambridge. Competitive awards to UK school children who take part in maths competitions.
2013	**Academic and Music scholarship** awarded for 7 years by my high school.

Projects, talks and other experience

06-08/2023 **Research Experience for Undergraduates, Hebrew University of Jerusalem**

- The only candidate from the UK selected and funded to take part in a 10-week summer school for undergraduates organised by the Hebrew University of Jerusalem, Israel
- Supervised by Dr Shaul Zemel
- Learned about local fields, adeles and ideles
- Delivered a short presentation on absolute values, residue fields and global fields
- Worked through chapters of Cassels and Frohlich's "Algebraic Number Theory" and Koch's "Number Theory - Algebraic Numbers and Functions"

01/2023 **Part II Presentations, University of Cambridge**

Gave a short talk on Galois Theory for third-year undergraduates.

12/2022 **Student Seminars at DPMMS, University of Cambridge**

Gave a talk on "Unfriendly Partitions" (see below in my Trinity research project).

07/2022 – 09/2022 **Trinity Summer Studentship Scheme, University of Cambridge**

An unfriendly partition of a graph splits its vertices into two sets such that each vertex has no more neighbours in its own set than in the other. It is currently unknown whether an unfriendly partition of an arbitrary countable graph exists.

- Won funding from the Studentship Scheme for an 8-week research in discrete mathematics on unfriendly partitions, supervised by Professor Imre Leader
- Investigated special cases of countable graphs and came up with a new method to construct unfriendly partitions of graphs of small maximal degree
- Wrote a 24-page report to summarise my findings

2022, 2023 **Computer-aided projects (CATAM) at University of Cambridge**

- Undertook four short projects in Part II and Part IB each, chosen from a list given by the department, worth exam credit
- Used Python and SageMath for computations and wrote a report on each project
- Part II: Calculating Galois groups of polynomials using resolvents, finding class groups of quadratic fields through binary quadratic forms, computing square roots modulo p via Legendre symbols and factoring polynomials, and finding matchings in a graph. Marks: 39/40, 37/40, 36/40, 37/40
- Part IB: Monte Carlo sampling of binary numbers, solving ODEs numerically, finding roots of complex polynomials to various degrees of accuracy and testing linear regression models against given data. Marks: 40/40, 28/40, 35/40, 40/40

2021 **Weizmann UK scholarship funded International Science Summer Institute**

- Received a scholarship of £4500 from Weizmann UK to attend a summer research school at the Weizmann Institute – held online due to the coronavirus
- Project title: "Optimisation of Medical Image Perception in Multiple Modalities using Colour Mapping and AI"
- Worked in a team of 8, mentored by Dr Slava Kalchenko, to mathematically analyse MRI and CT scans and apply colourisation algorithms to enhance grayscale images
- Used ImageJ Macro programming environment and Python
- Created an online quiz on GitHub Pages, using HTML and jQuery, to gather data for the project
  Code can be viewed on my GitHub website https://github.com/lovelace1024/

2020 **Weizmann alumni-organised international online summer camp**

- Project title: "Contact tracing effectiveness evaluation in epidemic scenarios using agent based models"
- Created an Agent Based Model simulating spread of coronavirus in Python
- Presented as part of a team of 3 in an online conference, and we were voted as best project overall
  Code can be viewed on my GitHub website https://github.com/lovelace1024/

UNIVERSITY OF CAMBRIDGE

I hereby certify that
NAOMI LYNN BAZLOV
of TRINITY COLLEGE
in the University of Cambridge
was at a full congregation holden in
the Senate-House on
20 OCTOBER 2023
admitted to the degree of
BACHELOR OF ARTS

Witness my hand this
twentieth day of October, two thousand and twenty-three

Administrative Officer

Registrary of the University

Research Statement

My interests lie in the areas of algebraic and analytic number theory; for my PhD, I would like to continue down this path. In particular, I am interested in exploring topics in the intersection of both algebraic and analytic methods and incorporating what I have previously studied during my undergraduate course at Cambridge, and am studying at Warwick.

I have already started working on a dissertation for my MSc, provisionally titled “Moments of Representation Numbers.” I am considering the functions r_0, r_1 and r_2 defined on the natural numbers, where r_i(n) is the number of ways to write n as the sum of two squares with i of them being squares of primes. I have looked at papers by Valentin Blomer, Andrew Granville, Alisa Sedunova, Cihan Sabuncu and Stephan Daniel on estimates of the first and second moments of these functions, obtaining their asymptotic form and bounds on the error term. Proof methods involve analytic techniques such as the Selberg-Delange method, inequalities on primes in arithmetic progression – for instance the Bombieri-Vinogradov and Brun-Titchmarsh inequalities – and sieve theory. There are also some results and conjectures about higher moments.

My aim is to investigate the existing results and attempt to apply similar techniques to obtain estimates for fractional moments of the representation numbers. In particular, the first and second moment of r_1 have the same order of main term x/log(x), only differing in the coefficient; it would be interesting to see how this coefficient behaves for fractional moments of r_1 in the range between 1 and 2.

Another direction in which I could develop my dissertation if time permits is to try to combine sieve methods with approaches via modular forms.

Aside from my dissertation, my previous experience with algebraic and analytic number theory includes the following. Last year, while I was a third year undergraduate student at Cambridge, I was introduced to analytic number theory in the Number Theory course: we proved the weak Prime Number Theorem – which states that the asymptotic behaviour of the prime counting function is x/log(x) – and Bertrand’s postulate. We also looked at quadratic reciprocity, binary quadratic forms, continued fractions and primality testing in this course.

This term, I learned more in the Master’s level Analytic Number Theory course at Warwick, where we saw the correlation between the zero-free region of the Riemann zeta function and error terms of the Prime Number Theorem, and refined the error bound to the classical O(x exp(-c log x)) term. We further proved the functional equation $\xi(s) = \xi(1 - s)$, where ξ depends on the Riemann zeta function and the gamma function. We finished by looking at Dirichlet characters and L-functions.

I previously briefly encountered Dirichlet characters in the Number Fields course in my third year at Cambridge, where we built on concepts from Galois Theory to study properties of number fields. I learned about Dedekind’s criterion, Minkowski’s lemma for lattices and the Minkowski bound for norms of prime ideals; together with Dedekind’s criterion, this bound gives us a powerful tool to study the class group of a number field. I subsequently completed a computer-assisted (CATAM) project where I investigated positive definite binary quadratic forms; the set of primitive reduced such forms of discriminant d, together with a composition operation, gives the structure of the class group of quadratic extensions of Q.

In summer of 2023 I was selected for the Research Experience for Undergraduates scheme at the Hebrew University of Jerusalem, Israel. Over 11 weeks, I completed a project in algebraic number theory under the guidance of Dr Shaul Zemel, and supported by a stipend. I started by learning about Discrete Valuation Rings (DVRs) and local fields. Four weeks into the project, I delivered a

short presentation to the other participants of the programme on absolute values, residue fields and global fields. Subsequently, I worked through chapters of books such Cassels and Frohlich's “Algebraic Number Theory”, where I learned about adeles and ideles, and Koch's “Number Theory - Algebraic Numbers and Functions”, where I primarily read about the local functional equation, Dedekind’s zeta function and L-series.

I realise that modular and automorphic forms and elliptic curves are essential to modern day research in number theory, and I will be taking the Modular Forms and Elliptic Curves courses next term at Warwick to further my knowledge in these areas and prepare myself to undertake doctoral research. As such, I would very much like to come to the Bristol Number Theory research group as a PhD student, and it would be ideal for me to work under the supervision of Professor Tim Dokchitser for my PhD research.

Professor C S Barnard
SENIOR TUTOR

TRINITY COLLEGE CAMBRIDGE

Naomi Lynn Bazlov

I write to confirm that Naomi Lynn Bazlov (Date of Birth 3 January 2003) is a full time Undergraduate member of Trinity College in the University of Cambridge. Miss Bazlov matriculated in the Michaelmas Term 2020.

Miss Bazlov commenced studying for the Bachelor of Arts Degree on 1 October 2020 and completed all academic requirements of the qualification on 16 June 2023. She is eligible to have her BA (Hons) degree conferred at any future University congregation. Miss Bazlov will receive her degree certificate and official transcript of results after her degree is conferred.

Undergraduate Academic Transcript

2020 - 2021

Easter Term 2021

Mathematical Tripos, Part IA

Papers	**Mark**
1 : Paper 1	See Attached Marks Breakdown Sheet
2 : Paper 2	
3 : Paper 3	
4 : Paper 4	

Overall Result : Class I
Overall Mark : 70/100
Rank : 72/251

2021 - 2022

Easter Term 2022

Mathematical Tripos, Part IB

Papers	**Mark**
CP : Computational Project	See Attached Marks Breakdown Sheet
1 : Paper 1	
2 : Paper 2	
3 : Paper 3	
4 : Paper 4	

Overall Result : Class II, division 1
Overall Mark : 65/100
Rank : 106/238

Professor C S Barnard
SENIOR TUTOR

TRINITY COLLEGE CAMBRIDGE

2022 - 2023

Easter Term 2023

Mathematical Tripos, Part II

Papers	**Mark**
CP : Computational Project	See Attached Marks Breakdown Sheet
1 : Paper 1	
2 : Paper 2	
3 : Paper 3	
4 : Paper 4	

Overall Result : Class II, division 1
Overall Mark : 64/100
Rank : 110/235

PROFESSOR C S BARNARD
SENIOR TUTOR
12 September 2023

TRINITY COLLEGE CAMBRIDGE CB2 1TQ

University of Cambridge
Mathematical Tripos Part IA Examination Results, June 2021

Bazlov,N.L. T Class I

On Papers 1-4 Section I questions are marked out of 10 and Section II questions are marked out of 20. Alpha and beta quality marks are awarded as follows:

On Section I questions 1 beta is awarded for a mark in the range 7..10
On Section II questions 1 alpha is awarded for a mark in the range 15..20
1 beta is awarded for a mark in the range 10..14

A merit mark, common to all three parts of the undergraduate Tripos, was used as a guide to examiners and was calculated as follows:

Merit = marks + 30 x alphas + 5 x betas - 120
if Class I, or if Class II.1 and alphas >= 8
marks + 15 x alphas + 5 x betas otherwise

The merit mark is closely related to the primary classification criteria which are the main, but not the only, factors taken into account when awarding a class.

The transcript mark is obtained by piecewise linear scaling of the merit mark within each class; 70% is a First, 60% a II.1, 50% a II.2 and 40% a Third.

Total mark, alpha, beta = 367, 9, 18 Merit = 607 Transcript mark = 70%

Topic	total mark, a, b	Question		Mark
Analysis I	49, 1, 3	Paper 1	I 4	10
			II 9	18
			II 10	10
			II 11	11
Differential Equations	58, 1, 3	Paper 2	I 1	10
			I 2	10
			II 5	11
			II 6	9
			II 8	18
Dynamics and Relativity	14, 0, 1	Paper 4	II 11	14
Groups	73, 3, 2	Paper 3	I 1	10
			I 2	7
			II 5	18
			II 6	18
			II 7	20
Numbers and Sets	64, 2, 3	Paper 4	I 1	10
			I 2	8
			II 5	11
			II 6	19
			II 8	16
Probability	41, 1, 2	Paper 2	I 3	5
			I 4	10
			II 9	10
			II 10	16
Vector Calculus	22, 0, 2	Paper 3	I 3	10
			II 9	1
			II 10	11
Vectors and Matrices	46, 1, 2	Paper 1	I 1	7
			I 2	6
			II 5	14
			II 7	19

University of Cambridge
Mathematical Tripos Part IB Examination Results, June 2022

Bazlov,N.L. T Class II, division i

On Papers 1-4 Section I questions are marked out of 10 and Section II questions are marked out of 20. Alpha and beta quality marks are awarded as follows:

On Section I questions 1 beta is awarded for a mark in the range 7..10
On Section II questions 1 alpha is awarded for a mark in the range 15..20
1 beta is awarded for a mark in the range 10..14

Each Computational Project is marked out of 40. Thus at most 160 marks are available. There are no alphas/betas.

A merit mark, common to all three parts of the undergraduate Tripos, was used as a guide to examiners and was calculated as follows:

Merit = marks + 30 x alphas + 5 x betas - 120
if Class I, or if Class II.1 and alphas >= 8
marks + 15 x alphas + 5 x betas otherwise

The merit mark is closely related to the primary classification criteria which are the main, but not the only, factors taken into account when awarding a class.

The transcript mark is obtained by piecewise linear scaling of the merit mark within each class; 70% is a First, 60% a II.1, 50% a II.2 and 40% a Third.

Total mark, alpha, beta = 441, 9, 10 Merit = 641 Transcript mark = 65%

Topic	total mark, a, b	Question		Mark
Analysis and Topology	61, 2, 2	Paper 1	II 10	16
		Paper 2	I 2	0
			II 10	2
		Paper 3	II 11	14
		Paper 4	I 2	10
			II 10	19
Complex Analysis or Complex Methods	3, 0, 0	Paper 1	I 3	3
Fluid Dynamics	10, 0, 1	Paper 1	II 16	1
		Paper 2	I 5	8
		Paper 3	I 7	1
Geometry	9, 0, 0	Paper 3	II 12	9
Groups, Rings and Modules	67, 2, 2	Paper 1	II 9	14
		Paper 2	I 1	5
			II 9	20
		Paper 3	II 10	16
		Paper 4	II 9	12
Linear Algebra	65, 3, 1	Paper 1	I 1	10
			II 8	2
		Paper 2	II 8	18
		Paper 3	II 9	17
		Paper 4	II 8	18
Markov Chains	26, 1, 1	Paper 1	II 19	11
		Paper 2	II 18	15
Statistics	10, 0, 0	Paper 1	I 6	6
			II 18	2
		Paper 2	I 6	2
Variational Principles	47, 1, 3	Paper 1	I 4	9
		Paper 2	II 13	15
		Paper 3	I 4	10
		Paper 4	II 13	13
Computational Projects	143			

Project Marks 1.1 40, 1.2 28, 2.3 35, 2.4 40

University of Cambridge
Mathematical Tripos Part II Examination Results, June 2023

Bazlov,N.L. T Class II, division i

On Papers 1-4 Section I questions are marked out of 10 and Section II questions are marked out of 20. Alpha and beta quality marks are awarded as follows:

On Section I questions 1 beta is awarded for a mark in the range 7..10
On Section II questions 1 alpha is awarded for a mark in the range 15..20
1 beta is awarded for a mark in the range 10..14

Each Computational Project is marked out of 40. The total marks shown are obtained by scaling the marks for each Project according to the number of units allocated to each project. At most 150 marks are available. There are no alphas/betas.

A merit mark, common to all three parts of the undergraduate Tripos, was used as a guide to examiners and was calculated as follows:

Merit = marks + 30 x alphas + 5 x betas - 120
if Class I, or if Class II.1 and alphas >= 8
marks + 15 x alphas + 5 x betas otherwise

The merit mark is closely related to the primary classification criteria which are the main, but not the only, factors taken into account when awarding a class.

The transcript mark is obtained by piecewise linear scaling of the merit mark within each class; 70% is a First, 60% a II.1, 50% a II.2 and 40% a Third.

Total mark, alpha, beta = 396, 9, 7 Merit = 581 Transcript mark = 64%

	Topic total mark, a, b	Question	Mark
Coding and Cryptography	2, 0, 0	Paper 3 I 3	2
Galois Theory	59, 2, 2	Paper 1 II 18	12
		Paper 2 II 18	16
		Paper 3 II 18	17
		Paper 4 II 18	14
Linear Analysis	39, 1, 2	Paper 1 II 22	17
		Paper 3 II 21	12
		Paper 4 II 22	10
Logic and Set Theory	17, 1, 0	Paper 2 II 16	17
Number Fields	30, 1, 1	Paper 2 II 20	17
		Paper 4 II 20	13
Number Theory	64, 2, 2	Paper 1 I 1	10
		Paper 2 I 1	6
		Paper 3 I 1	8
		II 11	20
		Paper 4 I 1	2
		II 11	18
Probability and Measure	2, 0, 0	Paper 1 II 27	2
Representation Theory	36, 2, 0	Paper 1 II 19	17
		Paper 3 II 19	15
		Paper 4 II 19	4
Topics in Analysis	7, 0, 0	Paper 2 II 11	7
Computational Projects (scaled total)	140		
Project Marks (unscaled)	15pt3 37, 15pt6 36, 16pt9 39, 17pt5 37		

WARWICK
THE UNIVERSITY OF WARWICK

Postgraduate Recruitment and Admissions
Admissions Office
Directorate of Education and Student Sucess
University of Bristol
31 Great George Street
Bristol BS1 5QD

January 8, 2024

To Whom It May Concern,

Reference for Naomi Bazlov - Mathematics (PhD)

I am a Warwick Zeeman Lecturer at the Mathematics Institute at the University of Warwick. I have known Naomi since October 2023, when she contacted me asking if I would supervise her Master's dissertation. She has been enrolled as a student since 2023/10/02 and their course of study is expected to end on 2024/10/02.

The dissertation project that I proposed is to explore recent work of Sabuncu and Granville-Sabuncu-Sedunova on representations of integers n in the form $n = p^2 + x^2$ where p is prime and x any integer. The general goal would be to write an exposition of selected parts of this work, and a review of what is known to date; to identify possible generalizations or other applications of the same approach; and ultimately to try to prove new results.

Naomi works extraordinarily rapidly and produced drafts and notes to a high standard of professionalism in a remarkably short time, based partly on the two articles I suggested and partly on suitable background reading of her own selection. She is a knowledgeable and critical reader and quickly suggested an angle which seems promising and which I hadn't thought about (fractional moments of the representation-counting function).

Naomi has met with Alisa Sedunova, one of the authors of the work on which her dissertation is based, who was visiting Warwick. Judging from my conversations with Alisa since then, Naomi made a good impression.

I expect that Naomi will graduate with Distinction. From my experience so far I already think that her understanding and performance is well above the level that their upper second class undergraduate degree might suggest. Regarding the grade for the dissertation, it is too early to make a serious prediction; however I would be somewhat surprised if the mark was below 82%, and 88% seems attainable.

Naomi's approach to her studies is fast-moving, thorough and organised, judging from her work on the dissertation so far. She has very extensive research experience given her level of study, including several computational group projects

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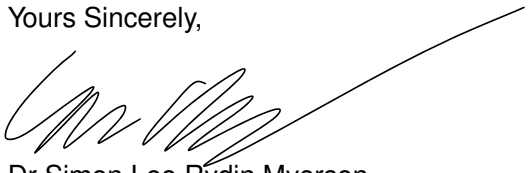
whose very impressive results can be seen online, and some interesting-sounding new work on unfriendly partitions.

Her outstanding communication skills have been a great help in the few months I have been acting as Naomi's dissertation supervisor. She has always been extremely well prepared for meetings and very transparent and clear about her plans and work to date.

She is very serious about further study in mathematics and is a dedicated and highly motivated worker. Independent thought and a high degree of aptitude for independent research are suggested by her choice of her own study plan, sources and goal for the project.

I have been very impressed by Naomi's initial work on her dissertation. Although I have not known her for long I already have a very powerful positive impression of her ability and commitment to pursue the most serious mathematical research. I strongly recommend her for the PhD course at Bristol.

Yours Sincerely,



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NAOMI BAZLOV

Naomi Bazlov recently finished her third year reading Mathematics at Trinity College Cambridge. I was her Director of Studies (academic advisor), and in addition I supervised her for several courses during her time in Cambridge.

Naomi is a very talented student. Before she arrived in Cambridge, she had twice been on the UK team for EGMO (the European Girls' Mathematical Olympiad), which means that she was judged to be among the top 4 girls at school in the UK. She did very well at EGMO, achieving a Silver medal on each occasion. And in Cambridge she continued to be excellent. Her special strength is perhaps analysis – for both the introductory first-year course, and for the second-year course dealing with metric spaces and topological spaces, she came up with a lot of solutions to hard problems. She had some genuinely original ideas, and reading her proofs was always a pleasure.

In the exams, Naomi has underperformed. She got a First in the first year, coming 72nd (out of 79 Firsts and 250 students altogether), but then a 2.1 in her second year, coming 106th (with the 2.1s running from position 73 to 175, so a high 2.1). In the third-year exams she again obtained a 2.1, coming 111st. While she shone in that year's analysis courses, being consistently rated as one of Trinity's top students in the analysis courses by her supervisors, it seems that in the exams she was undone by the exceptionally difficult and long questions in Analysis of Functions and Linear Analysis. I think that she does also panic a bit in the exams. On ability, she is certainly at the level of not just a First but a high First. Having graduated at that point, she chose not to stay in Cambridge for Part III but rather to go to Warwick for their Masters programme, and I think this was at least in part because she did not like the high stress of Cambridge exams.

Over the summer of 2022, I supervised Naomi on a summer research project. This was on the 'unfriendly graph conjecture', which asserts that every countable graph has an unfriendly partition (meaning a partition of the vertices so that each point has at least as many neighbours in the opposite class as in its own class). Naomi made good progress on this challenging open problem. She realised early on that a key problem is that there is no 'algorithmic' way known to find such a partition. This is true even when the graph is locally finite (meaning that all points have finite degree), which is a case when the conjecture is known to be true. So she set to work to find an algorithmic approach. This was a very good insight, as anything non-algorithmic (such as a compactness argument) has pretty much no hope of working in the general case. She was able to find such an approach when all degrees are at most 3, and then she managed to extend this to the case when all degrees are at most 4. So, while the original problem remains unsolved, she did develop all sorts of insights into the problem. Overall, I was very impressed with Naomi's ability to think over a long period.

My feeling is that Naomi will absolutely thrive in a PhD programme. Her sheer ability at maths, added to the fact the she is hardworking and also to her infectious enthusiasm, make this pretty certain. So I recommend her very strongly indeed.

Imre Leader (Professor of Pure Mathematics, University of Cambridge)

January 1st 2024