Personal details

Personal details

First / given name	Abdella
Second given name	Ali
Third given name	
Surname/family name	Mohammed
Date of birth	02 January 2001
Preferred first/given name	Abdella
Previous surname	
Country of birth	Eritrea
Legal nationality	Eritrean
Dual nationality	
Country of residence	England
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 2HU
Address Line 1	Somerville College
Address Line 2	28 Little Clarendon Street
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?	Yes
Country	United Kingdom
Postcode	OX2 6HD
Address Line 1	Woodstock Road
Address Line 2	Barbara Craig House
City	Oxford
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 Kent	Master's Degree (PG)	Academic Qualification	Mathematics	Predicted	First Class	19/Sep/2020	14/Jun/2024
University of Oxford, UK	Master's Degree (PG)	Academic Qualification	Mathematics	Predicted	Unknown	13/Oct/2024	30/Jun/2025

If these qualifications have altered since your last application please note the changes in the free text box here. I was awarded Master of Mathematics with First Class Honours.

English Language

Is English your first language? No
What is your first language? Saho (Eritrean ethnic Saho language)
Did you study at school/university where you were taught in English? Yes
For how many years? 9
Have you sat a relevant English language test? No

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?	Yes
Please type your personal statement in the box	

Research proposal

Research proposal

Proposed supervisor 1	
Proposed supervisor 1	
Proposed project title (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	Dr
Forename	Rowena
Surname	Paget
Position	Senior Lecturer
Institution/Company	University of Kent
Email address	r.e.paget@kent.ac.uk
Country	United Kingdom

Referee 2

Do you have a second reference to upload?	No
Type of reference	Academic
Referee title	Dr
Forename	Ian
Surname	Wood
Position	Senior Lecturer
Institution/Company	University of Kent
Email address	i.wood@kent.ac.uk
Country	United Kingdom

Funding

Funding 1

What is your likely source of funding?	Scholarship
Please give the name of your scholarship or Studentship	Martingale PhD Scholarship
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

Submission

Documents

Document type	File name
Research proposal	Bristol Research Statement .pdf
Personal statement	Bristol Personal Statement.pdf
Curriculum vitae	Academic CV.pdf
Transcript	MMath transcript_compressed.pdf
Degree certificate	MMath 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.

RESEARCH EXPERIENCES

JULY 2023 – APRIL 2024

DIAGRAMALGEBRAS, UNIVERSITY OF KENT

In my MMath dissertation on diagram algebras, I am deepening my understanding of complex algebraic structures like Brauer and Temperley-Lieb algebras, enhancing my analytical and problem-solving abilities. I'm integrating interdisciplinary knowledge to enrich my research. The use of LaTeX for documentation is further refining my technical writing skills. Additionally, preparing for the viva defence of my dissertation will develop my skills in articulately defending my work and engaging in academic discourse with leading experts in the field, a critical skill for any aspiring academic.

SEPTEMBER 2022– MARCH 2023

REPRESENTATION OF A LIE ALGEBRA, UNIVERSITY OF KENT

In my third year project, I engaged deeply with advanced mathematical concepts, particularly Lie algebras, enhancing my problem-solving and abstract reasoning abilities. Through meticulous documentation using LaTeX, I refined my skills in precise and clear academic writing. This project also strengthened my ability to effectively communicate complex ideas, catering to both specialist and non-specialist audiences. My proficiency in IT, coupled with strong organizational skills, was pivotal in managing my learning process efficiently.

JULY – SEPTEMBER 2022

SUMMER RESEARCH PROJECT ON NUMBER THEORY, UNIVERSITY OF KENT

During my summer project on Primality Testing with Professor Andrew Hone and a team of students, I developed key skills in collaborative mathematics, enhancing our team's dynamics and problem-solving abilities. This experience significantly boosted my confidence and rigour in presenting complex mathematical concepts in a large hall setting. Through this project, I also built lasting professional relationships and a network in the mathematical community.

EDUCATION

SEPTEMBER 2020 – JUNE 2024

MASTER OF MATHEMATICS (MMATH), UNIVERSITY OF KENT

KNOWLEDGE OF MATHEMATICAL SOFTWARE

- Proficient in using LaTeX and Maple
- Working knowledge of Python

MEMBERSHIP IN PROFESSIONAL BODIES AND OTHER RELEVANT ACTIVITIES

I have been a member of the Institute of Mathematics and its Applications since 2020. In addition, I am an EDI student representative at my current university and engage with the wider community by working as an outreach ambassador for the university. As a Student Ambassador, I have been intricately involved with the 'Levelling Up Mathematics' initiative at my university, distinguished as one of only two tutors selected to actively support and deliver tutoring sessions for this programme. This has involved direct efforts to address educational disparities in mathematics. Additionally, as a teaching assistant for the Access to HE programme, I have provided targeted tutoring for students preparing for their Maths GCSE, enhancing my ability to communicate mathematical concepts to wide range of abilities effectively. These experiences have sharpened my skills in empathetic communication, adaptability to different educational needs, and a deep-seated commitment to educational inclusivity, which are paramount in advancing the field of mathematical sciences education and research.

UNIVERSITY OF KENT

It is hereby certified that

ABDELLA ALI MOHAMMED

was admitted to the degree of

Master of Mathematics

with First Class Honours

at a Congregation of this University held on

22 July 2024

Vice-Chancellor

Director of Strategic Planning and Performance

Student Number: 20886073 | Certificate Number: 72358366-01-7OQM 20886073-2-1

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I was born in a rural settlement in Eritrea, where my early education involved practising equations in the sand. My journey took a transformative turn at the age of 14 when I arrived in the UK as an unaccompanied asylum seeker. Nine years later, in July 2024, I graduated with First Class Honours in Master of Mathematics (MMath) and am now pursuing an MSc in Mathematics at the University of Oxford, supported by one of the most competitive scholarships. My academic trajectory reflects a profound passion for mathematics and unwavering perseverance.

Adjusting to a new culture and education system presented significant challenges. My education in Eritrea was in my ethnic language, Saho, so I had to relearn everything from scratch. Constantly moving between foster placements and later living in a hostel during my A-Levels disrupted my studies. These obstacles, however, strengthened my resilience and deepened my commitment to education.

During my undergraduate studies, I co-founded the Targeted-Outreach programme at the University of Kent, an initiative run by care-leaver ambassadors for care-experienced prospective students. I presented this programme at an educational conference, encouraging other universities to implement similar initiatives, and trained new ambassadors to ensure the continuity of this work. These outreach efforts have been instrumental in making higher education more accessible to marginalised communities.

As a Martingale PhD funding offer holder, my academic achievements in undergraduate mathematics have been recognised at the highest level. This milestone underscores my ability to overcome challenges and highlights my potential to make significant contributions to mathematical sciences. Currently pursuing an MSc in Mathematics at the University of Oxford, I stand at a pivotal moment in my academic journey.

My motivation to pursue a PhD in mathematical sciences is driven by four key factors: passion, commitment, career aspirations, and outreach.

Passion:
Since my university application, where I wrote that “the beauty of proof triggers my joy,” my love for mathematics has only deepened. Mathematics is not merely an academic pursuit for me; it is a way of thinking and living. The process of observing phenomena, forming conjectures, and proving statements that hold universally true continues to ignite my enthusiasm.

Commitment:
My dedication to mathematics extends beyond formal coursework. As an EPSRC intern last summer, I worked with Prof. Ben Davison at the University of Edinburgh, exploring the relationship between polynomials and irreducible representations of quivers. In 2022, I undertook an unpaid summer research project with Prof. Andy Hone, investigating prime number generation and primality verification. These experiences have solidified my commitment to advancing mathematical research.

Career Aspirations:
I aspire to become an academic, contributing to the field by proving and discovering mathematical results that have yet to be achieved. My goal is to engage in projects that require synthesising insights from various branches of mathematics while bridging the gap between theoretical and applied mathematics. I aim to leverage these connections to gain deeper insights into complex research problems.

Outreach:
I am deeply committed to serving as a role model for others from backgrounds like mine. Mathematics has been a powerful tool for my own social mobility and has opened doors I never imagined possible. I hope to inspire others from similar backgrounds to pursue opportunities in mathematics, demonstrating its potential to transform lives and contribute meaningfully to society. Through institutions and organisations like the Martingale Foundation, I aim to amplify these opportunities for others.

As a Martingale PhD funding offer holder, my academic achievements in undergraduate mathematics have been recognised at the highest level. This milestone underscores my ability to overcome challenges and highlights my potential to make significant contributions to mathematical sciences.

I am broadly interested in applied mathematics, with a preference for areas that integrate advanced pure mathematics—such as analysis, algebra, and geometry—into real-world applications. I am drawn to topics with a substantial theoretical side. An ideal PhD project for me would bridge the theoretical and practical, leveraging advanced mathematical techniques to address problems in applied mathematics. This is why I am especially attracted to PhD opportunities in Mathematical Optimisation, Applied Numerical Analysis, and Deep Learning.

My Master of Mathematics (MMath), which I completed across diverse areas of mathematics and its applications, provided me with a strong theoretical foundation. The MSc modules I am currently pursuing at the University of Oxford—Numerical Linear Algebra, Perturbation Methods, and Theory of Deep Learning—perfectly complement my desire to deepen my theoretical understanding while appreciating its practical applications. Next term, I plan to take Computational Algebraic Topology, Networks, and Continuous Optimisation. The design of my MSc allows me to broaden my mathematical knowledge while exploring various, often heterogeneous, applications of the largely pure mathematics I studied during my MMath. This academic adventure is helping me appreciate the necessity of studying certain mathematical topics abstractly, as well as the challenges that arise when applying and interpreting these theoretical results to problems with real-world contexts.

My MMath dissertation, which focused on the representation theory of diagram algebras, exemplifies my potential to make original contributions to mathematics. In this work, I developed an alternative proof to a contemporary research problem. While this contribution was rewarding, its limited immediate practical application and accessibility beyond the field left me unsatisfied. This experience reinforced my desire to pursue a PhD where I can bridge theoretical advances with practical applications that resonate more broadly. My current MSc dissertation, under the supervision of Prof. Coralia Cartis at the University of Oxford, aligns perfectly with my broader ambitions and interests. I am exploring the optimisation of Nonlinear Matrix Recovery for matrices that follow an algebraic model. This project integrates various areas of mathematics and transcends both pure and applied domains. Until recently, the Nonlinear Matrix Recovery problem was considered NP-hard. However, recent work shows that for certain matrices—those following algebraic models—advanced theories from algebraic geometry can be exploited to recover the matrices efficiently.

The 2024 paper *'A Bridge between Invariant Theory and Maximum Likelihood Estimation'* by Améndola et al. resonates with me. The authors' ability to establish profound

connections between seemingly unrelated topics is inspiring. While I do not have all the necessary background to fully understand the paper, its seamless integration of invariant theory, geometry, linear algebra, and statistics excites me deeply.

Ultimately, I aspire to conduct research that resonates across disciplines, connecting rigorous theoretical work to applications that have a meaningful impact on the real world.

I have also demonstrated my ability to work in group settings in the context of mathematical research. Last summer, as an EPSRC Intern at the University of Edinburgh, I collaborated with eight students from seven different universities. During the internship, we split into smaller research groups and presented our progress weekly. Outside the academic setting, we organised social events to foster a strong cohort culture and improve our experience. This demonstrates my ability to embrace the benefits of working within a research group and to engage with wider interactions at the department and university level.

STUDENT TRANSCRIPT

Legal Name	Abdella Ali Mohammed	**Name of Qualification**	Master of Mathematics
HESA Reference Number	2011228860734	**Main Field of Study for Qualification**	Mathematics
Kent ID	20886073	**Level of Qualification**	Level 7 (Master Degree, PG Certificate)
Name of Awarding Institution	University of Kent	**Professional or Statutory body of accreditation**	
Teaching Campus	Canterbury	**Accreditation Bodies**	https://www.kent.ac.uk/education/regulatory-framework/codes-of-practice-for-taught-courses#annex-s
Main Language of Instruction	English	**Classification Guide**	https://www.kent.ac.uk/education/regulatory-framework/credit-framework
Registration Date	19/09/2020	**Completion Date**	14/06/2024

Session Taught	Module Code	Module Title	CWork Mark (% Contribution)	Diss/Proj Mark (% Contribution)	Exam Mark (% Contribution)	Final Mark	Credit Level	Credit Awarded	ECTS Credit
2021	MAST4001	Algebraic Methods	90 (20%)	-	59 (80%)	65	4	15	7.5
2021	MAST4002	Applications of Mathematics	77 (20%)	-	69 (80%)	71	4	15	7.5
2021	MAST4004	Linear Algebra	92 (20%)	-	77 (80%)	80	4	15	7.5
2021	MAST4006	Mathematical Methods 1	69 (20%)	-	74 (80%)	73	4	15	7.5
2021	MAST4007	Mathematical Methods 2	83 (20%)	-	58 (80%)	63	4	15	7.5
2021	MAST4009	Probability	82 (20%)	-	42 (80%)	50	4	15	7.5
2021	MAST4010	Real Analysis 1	96 (20%)	-	85 (80%)	87	4	15	7.5
2021	MAST4011	Statistics	71 (20%)	-	53 (80%)	57	4	15	7.5
UG Stage 1 Result						**Distinction**			
2022	MAST5003	Groups and Symmetries	82 (20%)	-	53 (80%)	60	5	15	7.5
2022	MAST5004	Lagrangian and Hamiltonian Dynamics	84 (20%)	-	69 (80%)	72	5	15	7.5
2022	MAST5005	Linear Partial Differential Equations	61 (20%)	-	81 (80%)	77	5	15	7.5
2022	MAST5009	Numerical Methods	90 (20%)	-	60 (80%)	66	5	15	7.5
2022	MAST5012	Ordinary Differential Equations	95 (20%)	-	63 (80%)	67	5	15	7.5
2022	MAST5013	Real Analysis 2	87 (20%)	-	63 (80%)	68	5	15	7.5
2022	MAST5014	Rings and Fields	93 (20%)	-	57 (80%)	64	5	15	7.5
2022	MAST5660	Number Theory	97 (20%)	-	94 (80%)	95	5	15	7.5
2023	MAST5490	Discrete Mathematics	100 (20%)	-	58 (80%)	66	6	15	7.5
2023	MAST5670	Topology	89 (20%)	-	82 (80%)	83	6	15	7.5
2023	MAST6002	Linear and Nonlinear Waves	63 (20%)	-	66 (80%)	65	6	15	7.5
2023	MAST6017	Functions of a Complex Variable	90 (20%)	-	95 (80%)	94	6	15	7.5
2023	MAST6018	Games and Strategy	95 (20%)	-	56 (80%)	64	6	15	7.5
2023	MAST6091	Mathematics in the World of Finance	66 (20%)	-	42 (80%)	47	6	15	7.5
2023	MAST6704	Discovering and Communicating Mathematics	72 (50%)	78 (50%)	-	75	6	30	15
2024	MAST7003	Groups and Representations	93 (40%)	-	56 (60%)	71	7	15	7.5
2024	MAST7005	Operators and Matrices	92 (40%)	-	69 (60%)	78	7	15	7.5
2024	MAST7020	Dissertation for MMath Mathematics	66 (30%)	72 (70%)	-	70	7	45	22.5
2024	MAST7022	Integrable Systems	86 (40%)	-	68 (60%)	75	7	15	7.5
2024	MAST7027	Polynomials in Several Variables	84 (40%)	-	83 (60%)	83	7	15	7.5
2024	MAST9950	Graph and Combinatorics	90 (40%)	-	68 (60%)	77	7	15	7.5

University of Kent
Director of Strategic Planning & Performance, Academic Strategy
18 JUL 2024
A. Jackson

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STUDENT TRANSCRIPT

Final Result		**First Class**	**480** **240**

Key		Notes in Final Mark					
-	Not Applicable	Numerically Classified	C	Pass on Condone	Pass/Fail Classfied	Dist	Pass with Distinction
*	Adjusted mark due to module retaken		F	Fail		Merit	Pass with Merit
NC	Non Contributory to Award		S	Pass on Compensation		Pass	Pass
			T	Trailing Credits		Fail	Fail

University of Kent
Director of Strategic Planning & Performance, Academic Strategy
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Dr Rowena Paget
Senior Lecturer in Pure Mathematics

Dialling code for Canterbury
01227 (UK) or +44 1227 (International)
Tel: 824755 direct line
764000 switchboard (ext. 4755)
Fax: 827932
Email: R.E.Paget@kent.ac.uk
http://www.kent.ac.uk/SMSAS/

21 January 2025

Dear Colleague,

I am writing in support of the application by Abdella Mohammed for doctoral study in Mathematics. I have known Abdella for over 4 years, during his time studying for his MMath degree at the University of Kent and keeping in touch with him now during his MSc study in Oxford. When he was at Kent, I was lecturer for some of his courses, I supervised his final year project, and I also worked closely with Abdella in his outreach work. I recommended Abdella study at Oxford in order for him to expand the breadth of his mathematics beyond what was covered in Kent. This has provided him with a grounding in more applied areas, and is excellent preparation for his desired PhD.

In Stage 1, Abdella achieved a distinction. His best marks were in the pure maths modules such as *Real Analysis 1* (87%) and *Linear Algebr*a (80%). At Stage 2, Abdella's highest mark was in *Number Theory* (95%). I was lecturer for this module. Abdella worked diligently, attempting the additional exercises I had set as well as the expected coursework. His attitude to learning throughout the course was excellent, and his efforts paid off. At Stage 3, Abdella achieved a first class average mark. He excelled in other abstract modules such as *Topology* and *Functions of a Complex Variable*. He also undertook a project on Lie Algebras and was awarded a first class mark for this: he developed a good understanding from self-study and was able to communicate his ideas effectively in writing. In his final year, I taught him *Groups and Representations*; Abdella showed himself to be an engaged student who answered questions in class. His coursework was near perfect – the best in the class – and in this, and every other module, he achieved a first class mark. I was supervisor of Abdella's final year project. Interested in applications of representation theory, he chose to study Temperley-Lieb algebras and used these as a stepping stone to understand other diagram algebras that are relevant in many areas of mathematics and also in physics. The project introduced him to mathematical research, and allowed him to demonstrate his strong communication skills. He showed he is able to read research papers, persevere when the way forward is not clear, and use results rigorously in new contexts. Abdella also undertook a research project at the University of Edinburgh in summer 2024 ("Count me in"), further developing his independent research skills.

Overall Abdella has shown he has the mathematical background required to succeed in a PhD. He combines broad knowledge in pure mathematics from his undergraduate with the specialist applied topics he is studying this year. His experience of mathematical research has been fruitful and, most importantly, it has excited him to do more. Abdella most certainly has the commitment, perseverance and enthusiasm that a Ph.D. student needs.

Abdella is one of the most dedicated students I have met. He is passionate about mathematics and is always keen to learn more. This passion is apparent in his outreach work. Abdella has been worked as a tutor on the project *Levelling up: maths for Black heritage students* throughout 2023, delivering online tutorials to A level maths students. He also undertook extensive widening participation work for the University of Kent. We are grateful to him for his pioneering work to support care leavers into university, which included both interacting with the young people and the significant adults involved in their lives. In his time in Kent he had an impact on many young people across the county. He undertook this work because he believes in the importance of mathematics and the importance of access to mathematics education for all, but the huge number of hours of work done was due to financial necessity in order to support himself through university. It is important to bear this in mind when comparing his work to those of other, more privileged, students. Abdella has won a funded Martingale doctoral studentship that will allow him to fully devote himself to research, and allow him to achieve what I know he is capable of.

I strongly recommend Abdella to you as a person who has the potential for excellence in doctoral studies. He has demonstrated that excellence as an undergraduate. He has shown he has the capacity for mathematical research. Moreover, he has shown the strength of character that will permit him to overcome the obstacles that will inevitably be faced in PhD study. Please do not hesitate to contact me if you require any further information.

Yours faithfully

Dr Rowena Paget

It is University policy that all references include the following statement: "The University accepts no liability for the statements or information contained in this reference, although they are correct to the best of my belief."

Dr Ian Geoffrey Wood
Senior Lecturer in Mathematics
School of Mathematics, Statistics & Actuarial Science
University of Kent
Canterbury, Kent CT2 7NF
Phone: 01227 823649
E-mail: i.wood@kent.ac.uk

December 27th, 2024

Dear Madam/Sir,

Reference for Mr Abdella Mohammed

Abdella Mohammed is currently a student on the MSc Mathematics programme at Oxford. Before moving to Oxford, he was a student on the four-year MMath degree at the University of Kent from which he graduated with First Class Honours this summer.

He achieved first class marks on all his final year modules: *Polynomials in Several Variables* (83%*), Groups and Representations* (71%), *Operators and Matrices* (78%), *Integrable Systems* (75%), and *Graphs and Combinatorics* (77%), as well as the dissertation module (70%), completing his final dissertation on *Diagram Algebras and Representation Theory.*

He also had first-class averages at both Stages 2 and 3, including the modules *Functions of a Complex Variable* (94%), *Topology* (83%), *Number Theory* (95%), *Linear PDE* (77%) and *Lagrangian and Hamiltonian Dynamics* (72%). At Stage 3, he also took the project module *Discovering and Communicating Mathematics* for which he completed a project on *Lie Algebras,* achieving 75%.

As shown in his topic choices for the project and dissertation, during his time at Kent, Mr Mohammed put a lot of his focus on pure mathematics. For his MSc at Oxford, he is now more focused on applications of mathematics, covering topics like deep learning and geophysical applications of maths. For his dissertation he is working on a topic related to numerical optimisation for matrices. Therefore, I believe that by the time he completes his studies at Oxford, he will have a strong background across a wide range of areas of mathematics.

I have known Mr Mohammed since the start of his second year at Kent when I taught him on the module *Real Analysis 2.* While not directly supervising him, as convenor of the project and dissertation modules at Kent, I have had a lot of contact with him over the past couple of years. Mr Mohammed is a very engaged and inquisitive student. He has an

excellent coursework and attendance record. Moreover, he has the confidence to ask questions when he does not fully understand a topic, and he is always a great pleasure to interact with.

Mr Mohammed is a former child refugee and care leaver who achieved his strong results despite having to work to earn money to support himself throughout his undergraduate studies. Some of this work involved outreach activities for the school and university, and Mr Mohammed has been an excellent ambassador for Kent.

By the end of the current academic year, Mr Mohammed will have added an MSc from Oxford to his background of four years of university-level mathematics study from Kent. His CV shows that he can adapt to new circumstances and challenges exceptionally well. I am convinced that he has the ability, enthusiasm and dedication to meet the challenges of a PhD in mathematics and to make a success of it. I am happy to strongly recommend him to you.

Yours sincerely,

Dr Ian Geoffrey Wood