Curriculum Vitae

Liam Baker

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1 Personal Information

Full name:	Liam Bradwin Baker
Age:	29 years
Date of Birth:	2 November 1992
Gender:	Male
Home and postal address:	23 Condé Road
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	Stellenbosch
	South Africa
	7760
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Email:	`bakerbakura@gmail.com` (personal)
Languages:	English
	Afrikaans
	French

2 Educational History

Primary:	Duneside Primary School (Grade 1)	1999
	Imperial Primary School (Grades 2-7)	2000–2005
Secondary:	Mondale High School	2006–2009
	Matric certificate received	December 2009
Tertiary:	University of Cape Town (UCT)	2010–2013
	BSc (Maths, Applied Maths) with distinction received	December 2012
	BSc (Hons) (Mathematics) first class received	December 2013
	Stellenbosch University (SU)	2014–2015, 2018–2020
	MSc (Mathematics) cum laude received	December 2015
	PhD (Mathematics) received	April 2020

3   Employment History

- Self-employed as a private tutor for secondary and tertiary students from 2007 to 2014.

- Employed by UCT's Department of Mathematics and Applied Mathematics as a Mathematics Tutor from February 2012 to November 2013.

- Employed by SU's Department of Mathematical Sciences as a Tutor from February to November 2015.

- Employed by The Standard Bank of South Africa as a Data Analyst from February to October 2016.

- Employed by Isazi Consulting (Pty) Ltd. as a Data Scientist from November 2016 to January 2018.

- Employed by SU's Department of Mathematical Sciences as a Contract Lecturer from April to November 2018, lecturing two large first-year engineering mathematics courses.

- Employed by Isazi Consulting (Pty) Ltd. as a Data Scientist from November 2019 to July 2020.

- Employed by SU's Department of Mathematical Sciences as a Lecturer from July 2020.

4   Academic Achievements and Participation

4.1   Participation in mathematical competitions

- Placed 11th, 3rd, 1st, and 2nd in the UCT Mathematics Competition in 2006, 2007, 2008 and 2009 respectively.

- Represented South Africa at the 2008 Pan African Mathematical Olympiad held in Benin as part of a team of four, winning a silver medal and placing 5th.

- Represented South Africa at the 2008 International Mathematical Olympiad (IMO) held in Madrid, Spain as part of a team of six, achieving an Honourable Mention.

- Represented South Africa at the 2009 IMO held in Bremen, Germany, winning a bronze medal.

- Represented UCT at the 20th International Mathematics Competition for Students (IMC) held in Blagoevgrad, Bulgaria in 2013, winning a First Prize and placing 33rd of 321 contestants.

- Participated in the IMC in 2014, 2015, 2018 and 2019 as Team Leader for SU's and UCT's teams, and in 2021 as one of the Team Leaders for the combined South African team.

- Participated in the Simon Marais Mathematics Competition in 2021 as a member of the Problem Committee.

- Participated in the Pan African Mathematical Olympiads in 2015 and 2016 as Team Leader for the South African team, in 2018 as a member of the Problem Committee and a Coordinator (marker), in 2019 as the chair of the Local Organising Committee (and thus also a member of the Supervising Committee), and in 2021 as a member of the Problem Committee.

- Participated in the International Mathematical Olympiads in 2014 as a Problem Coordinator and in 2017, 2018, 2019, 2020, and 2021 as Team Leader for the South African team.

4.2   Bursaries, scholarships and fellowships

- Recipient of a Science Entrance Scholarship and a Vice-Chancellor's Scholarship from the University of Cape Town (UCT) in 2010.

- Recipient of a bursary from the Sasol Inzalo Foundation in the years 2011, 2012 and 2013.

- Recipient of a Science Faculty Scholarship from UCT in the years 2011 and 2012.

- Recipient of a Jacob Burlak Memorial Scholarship from UCT in 2011.

- Recipient of a Mellon Mays Undergraduate Fellowship in the 2012/2013 period.

- Recipient of a Postgraduate Merit bursary from Stellenbosch University in 2014.

- Recipient of a bursary from the Standard Bank 150 Programme in 2014 and 2015.

- Recipient of a bursary from the Harry Crossley Foundation in 2018 and 2019.

- Recipient of a bursary from the Centre of Excellence in Mathematical and Statistical Sciences in 2019.

4.3   Conferences, workshops and summer schools

- Participated in the inaugural International Mathematical Summer School for Students in 2011.

- Participated in a Summer Research Colloquium held at Williams College in the US in 2012 focussing on how to conduct research, as part of the aforementioned Mellon Mays Undergraduate Fellowship.

- Presented work at the Mellon Mays Undergraduate Fellowship Regional Workshop in September 2013.

- Participated in the 2nd Heidelberg Laureate Forum held in Heidelberg, Germany in 2014.

- Participated in the 57th Annual Conference of the South African Mathematical Society in 2014.

- Participated in the AIMS-Stellenbosch University Number Theory Conference, 19-23 January 2015.

- Participated in the inaugural International Conference in Number Theory and Physics held at IMPA in Rio de Janeiro, Brazil from 15-26 June 2015.

- Participated in the conference New Developments in the Theory of Modular Forms over Function Fields in Pisa, Italy in November 2018.

- Presented work at the AIMS-Stellenbosch University Number Theory Conference, 14-18 January 2019.

4.4   Other

- Won class medals at UCT for MAM1000W (Mathematics 1), MAM1019H (Fundamentals of Mathematics), and MAM1043H (Modelling and Applied Computing) in 2010, MAM2000W (Mathematics 2) in 2011, and MAM3000W (Mathematics 3) in 2012, with final marks of 99%, 100%, 102%, 100%, and 100% respectively.

- Submitted a problem for use in the 2012 IMO, which was used as Problem 4. This is the first ever IMO problem which was submitted from an African country.

- Submitted a problem for use in the 2019 IMO, which was used as Problem 1. This is the third ever IMO problem which was submitted from an African country.

- Received the S2A3 medal in 2015 from the Southern African Association for the Advancement of Science for the best MSc thesis at Stellenbosch University for that year.

- Appeared on Cape Town TV and CCFM multiple times each for public engagement regarding mathematics competitions.

5 Service

- Since December 2011 I have volunteered as a coach at various training and selection camps organised by the South African Mathematics Foundation (SAMF) for the purpose of identifying and training teams to represent South Africa at the International Mathematical Olympiad (IMO) and Pan African Mathematical Olympiad (PAMO).

- From January 2012 I have volunteered at Hillsong Church South Africa, at the Century City campus from January 2012 to March 2013, at the Mitchells Plain campus from June 2012 to March 2015, at the Johannesburg campus from February 2016 to January 2018 and at the Stellenbosch campus from March 2018. I have also led a team of volunteers at Mitchells Plain every Sunday from February 2014 to July 2015, and currently at the Stellenbosch campus from March 2018.

- Since September 2014 I have served as a member of the Senior Third Round committee for the South African Mathematics Olympiad (SAMO). The responsibility of this committee each year is to set and mark the Third Round Senior papers of the SAMO.

- I have served as a member of the African Mathematical Union's Commission for the PAMO (AMUPAMOC) representing Southern Africa since August 2017.

- I have served as the regional representative for Africa on the World Federation of National Mathematics Olympiads since August 2018.

6 Character and Academic References

Name	Institution	Relation	Email address
Dr D Basson	Stellenbosch University	PhD supervisor	djbasson@sun.ac.za
Prof F Breuer	University of Newcastle	PhD co-supervisor	Florian.Breuer@newcastle.edu.au
Prof A Solarin	National Math. Centre	AMUPAMOC Chair	asolarin2002@yahoo.com
Prof S Wagner	Uppsala University	MSc supervisor	stephan.wagner@math.uu.se

Publications

[1] Liam Baker and Stephan Wagner. 'Erdős-Surányi sequences and trigonometric integrals'. In: *Publicationes Mathematicae Debrecen* 89.4 (2016), pp. 469–482. URL: http://publi.math.unideb.hu/contents.php?szam=89.

[2] Liam Bradwin Baker. 'Analytic methods in combinatorial number theory'. MSc thesis. Stellenbosch University, 2015. URL: http://hdl.handle.net/10019.1/98017.

[3] Liam Bradwin Baker. 'Drinfeld modular forms of higher rank from a lattice-oriented point of view'. PhD thesis. Stellenbosch University, 2020. URL: http://hdl.handle.net/10019.1/108242.

[4] I. V. Barashenkov, L. Baker and N. V. Alexeeva. '$\mathcal{PT}$-symmetry breaking in a necklace of coupled optical waveguides'. In: *Phys. Rev. A* 87 (3 Mar. 2013), p. 033819. DOI: 10.1103/PhysRevA.87.033819. URL: http://link.aps.org/doi/10.1103/PhysRevA.87.033819.