Number 157 August 2026

NEWSLETTER

OF THE

NEW ZEALAND MATHEMATICAL SOCIETY

Contents

PUBLISHER'S NOTICE

This newsletter is the official organ of the New Zealand Mathematical Society Inc. This issue was edited by Marie Graff and Florian Lehner. Editorial enquiries and items for submission to this journal should be submitted as plain text or LaTeX files with "NZMS newsletter" in the title of the email to newsletter@nzmathsoc.org.nz. LaTeX templates are available upon request from the editors.

The official address of the Society is:

The New Zealand Mathematical Society,
c/- The Royal Society of New Zealand,
P.O. Box 598, Wellington, New Zealand.

However, correspondence should normally be sent to the Secretary:

New Zealand Mathematical Society
Assoc Prof Geertrui Van de Voorde (NZMS Secretary)
School of Mathematics and Statistics
University of Canterbury
Christchurch 8041
New Zealand
geertrui.vandevoorde@canterbury.ac.nz

NZMS Council and officers

Other positions of responsibility

Correspondents

Web Sites

NZMS homepage: nzmathsoc.org.nz (Webmaster: david.bryant@otago.ac.nz)

The newsletter is available at: nzmathsoc.org.nz/newsletter/

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EDITORIAL

Welcome to the August/September edition of the NZMS newsletter.

Many new contributions to explore again. As this issue comes late, we will not make an unnecessary long editorial. Just enjoy this new edition!

Reminder: The editorial team is seeking for a motivated soul to take over Marie, who will be stepping down as an editor.

Marie Graff and Florian Lehner

PRESIDENT'S COLUMN

Summer in the northern hemisphere is full of interesting conferences and this year is extra special in this regard because the International Congress of Mathematicians (ICM) took take place in Philadelphia in July. Almost 5,000 mathematicians from all over the world came together in person for this nine-day event organised by the International Mathematical Union (IMU). The NZMS is one of its constituent organisations and we were invited to be represented at the General Assembly (GA), which took place in New York City just before the ICM.

On behalf of the NZMS, I would like to thank Council member Priya Subramanian (UoA) for representing our society in person at both the GA and the ICM. Her participation was supported financially by the Royal Society Te Apārangi, through which we are representing New Zealand at the IMU. I am delighted that the ICM appears to have gone smoothly. Please see Priya's lively piece in this Newsletter about her experience and impressions, and congratulations to Clemency Montelle (UC) on her invited presentation in Section 20 History of Mathematics.

In news closer to home, you will have seen that registration is now open for the 2026 NZMS Colloquium hosted by the University of Otago. It will start with a customary Welcome Reception on the evening of Monday 30 November, with talks scheduled on 1–3 December. You are warmly invited to register on the Colloquium website `nzmathsoc.org.nz/nzms-colloquium-2026/`. Of course, this invitation is also to PhD and Masters students, as we are keen to ensure strong student participation.

This brings me to Prizes. Students at the 2026 NZMS Colloquium can win the Aitken Prize for the best contributed talk by a student, and there is also the John Butcher Poster prize of the NZ branch of ANZIAM for the best poster by an early-career researcher (up to 5 years after PhD). At the Colloquium we will also award the other prizes of the NZMS as well as Fellowships, and this is a late/last reminder to consider nominating a colleague for one of them; details can be found at `nzmathsoc.org.nz/awards/`.

December still seems quite a long way off. But this is actually already my last column before the Colloquium! I look forward to seeing many of you there.

All the best,

Bernd Krauskopf

TAXING THE MIND

Introduction: We live in an age when government and politicians encourage the pursuit of mathematics and numeracy in the young, but I wonder do they appreciate fully the long term ramifications of such an excursion. A mathematically enlightened electorate could be much more demanding, particularly in respect of, say, the current staircase system of taxation. This is underpinned by mathematics that is very basic indeed but it could be extended easily to produce a somewhat fairer system. The mathematical steps required can be understood by classroom students of a secondary age group, at no significant cost to the imagination. When such cohorts enter the work force they would likely then be equipped to appreciate and take with them the modified mathematical model of taxation proposed here. The concept is probably not new but it is worthy material nonetheless to tax the mind of young mathematicians, and others.

Most people will be familiar with the notion of how income tax is levied on annual earnings. Some, like those in paid employment under a scheme such as PAYE (Pay As You Earn), do not have to work out the details when tax is deducted and others might do their own calculations annually or employ the services of a tax accountant when the time comes to pay their dues. Whichever, industry standard software is available to calculate tax liabilities and here in NZ it is levied according to the above mentioned staircase function rule. In this rule, non uniform columns of strictly horizontal treads and vertical risers, whose heights and widths respectively represent a percentage tax take and an income band, are the preferred backdrop against which tax calculations are set, because they are simple to understand. However, there is a price to pay for simplicities, as will be evidenced later, and the mathematical material required then to remedy the situation can be just as easily understood. The interested reader of mathematics, young and otherwise, can appreciate then a very real example of applied mathematics and how it could impact their pockets.

The Current NZ Scenario: The state of affairs pertaining to current NZ taxation data, is shown below in Figure 1.

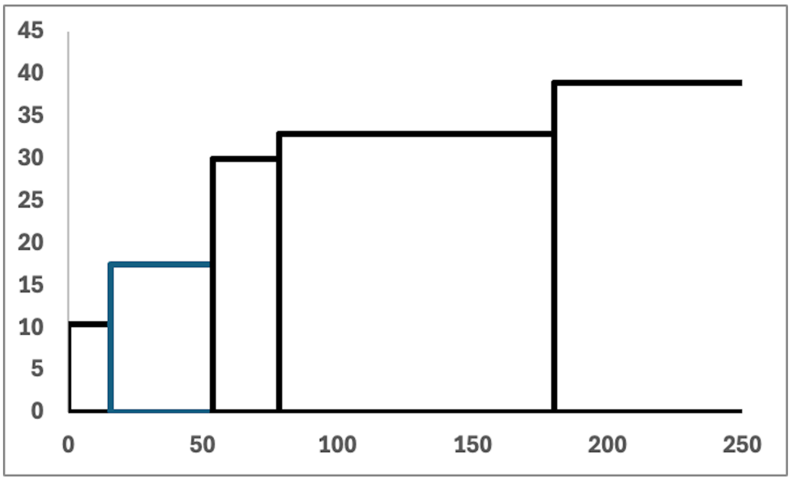


Figure 1: Current Tax-Take Staircase

In this Figure, the riser and tread dimensions are stipulated by Government, allowing thereby for a simple "area under the curve calculation" to determine the tax-take within any given tread (or part thereof) and its adjacent risers. In this particular case, there are 5 columns of steps and associated risers with dimensions as per the following data:

Step	$n=1$	$n=2$	$n=3$	$n=4$	$n=5$
Tread Band Width (\$1000): W_n	15.60	37.90	24.60	101.90	-
Riser Height % Tax Take: H_n	10.50	17.50	30.00	33.00	39.00

Table 1: Tax Band Step Dimensions

A typical $X-Y$ rectangular Cartesian coordinate system is shown in the Figure. The horizontal X-axis shows earning's bands, as per the Table, across which a taxpayer's income can be distributed to terminate somewhere in one of them, with tax taken from all such bands of interest. The vertical Y-axis shows columns of varying tread widths with different tax-takes, levied according to a stipulated column height. For example, if the height of the step in a given band or column is set at $H\%$, as in the table, the tax-take across the band is $(HW)/100$, where W (in one thousand NZ dollar blocks) denotes the step tread width. Specifically, the band widths in the above Figure can be denoted as per the Table by W_1, W_2, W_3, W_4 and W_5, respectively, and the corresponding riser heights are H_1, H_2, H_3, H_4 and H_5. Then, if one's total earnings terminate in, say, the m^{th} band (m assumes a value between 1 and 5) at a distance x_m along the X-axis from the start of that band, the total tax-take, T say, is simply the summation of areas under all of the treads up to the point x_m in the band of interest, as follows:

$$T = \frac{1}{100}\left(\sum_{n=1}^{m-1} W_n H_n + (x_m H_m)\right). \tag{1}$$

It is argued that this method of calculating tax dues is simple and thereby appealing. This is undoubtedly true and it was especially so in earlier days when computers and relevant apps didn't exist. Notwithstanding that programmes are freely available for a tax-take calculation, it is a simple exercise to do the business oneself. For example, by using an interactive spreadsheet or other home-grown software, one can determine data from equation (1) to produce a plot showing Tax-Take v. Income, as follows:

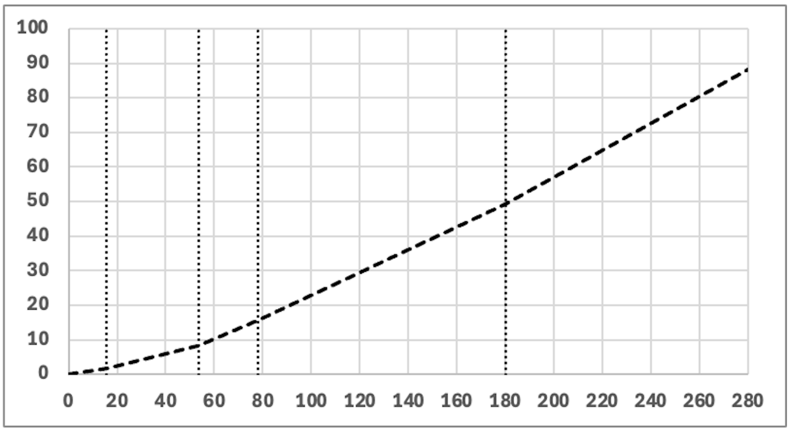


Figure 2: Tax-Take (vertical axis) v. Income (horizontal axis). Unit blocks of NZ$1000

In Figure 2, the vertical dotted lines delineate the different bands and the tax curve overall is a concatenated series of straight line segments. From a mathematical perspective, this is to be expected since each segment can arise also from integration (area under a curve) of a constant, which must result in a linear expression (see later comment). The curve is not continuously smooth, but it allows for an immediate visual perspective of the tax liability. It is possible also to present such information in an alternative, more telling format. For example, the tax-take at any point can be presented as a percentage of the earnings up to that point, to produce the figure 3 below:

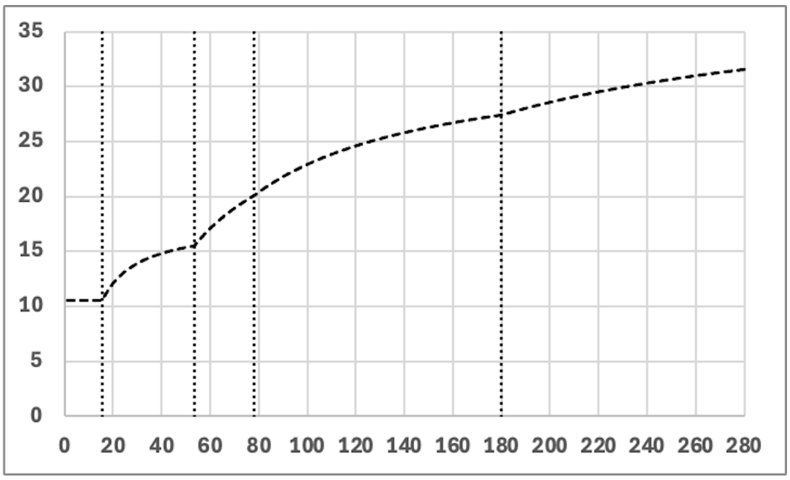
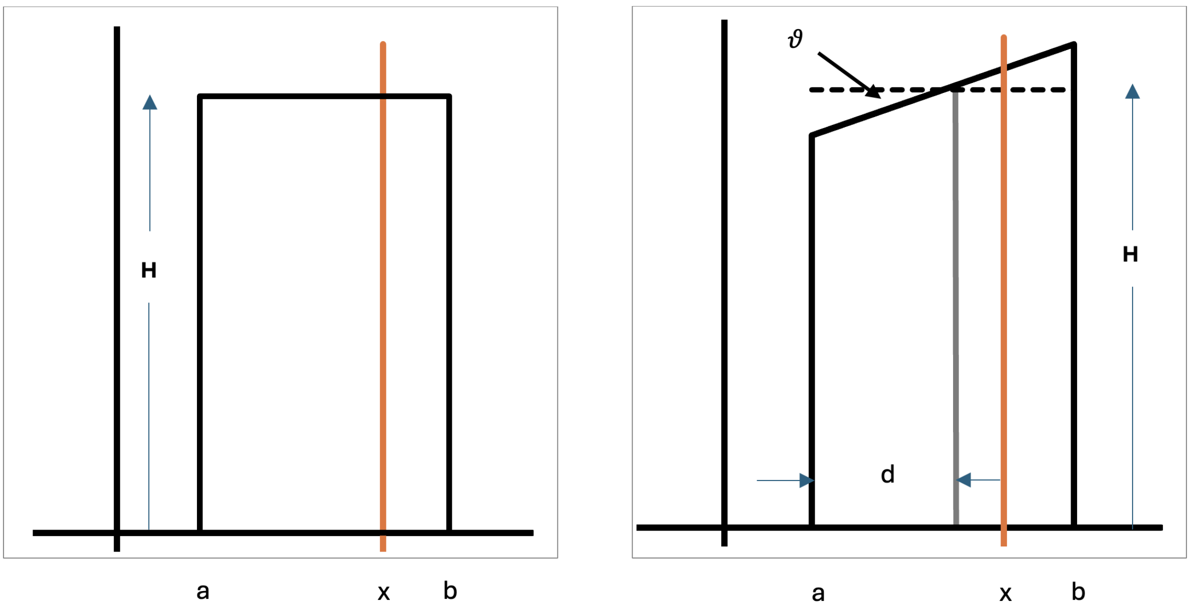


Figure 3: Percentage Tax-Take (vert. axis) v. Earnings (horiz. Axis data as per Figure 1)

It may be seen from this result that the percentage tax-take curve is not everywhere uniformly smooth. In the centre of some tax bands the curve bulges anomalously, which would seem to suggest an unfavourable aspect for tax payers near such centres. This can be appreciated more easily if the curve is referenced to a cord joining its band edge points. There is a related unfairness too in that tax payers at tread-start pay tax at the same rate as those at tread-end. Such anomalies are to be expected given the prescribed method of tax assessment, which appears to be one of employing a very crude staircase function to approximate an ideal but ill-defined smooth curve. They can be addressed by sloping the treads on the existing tax-staircase function. Alternatively, it is possible to increase the number of tax-bands in the existing model but any anomaly will remain, albeit then at a reduced level of significance.

The Slope Tread Scenario: The mathematical steps required in the slope tread scenario are simple, requiring only a knowledge of the area contained within a trapezium - in this instance, it is a four sided figure with two parallel sides and a third side that is at right angles to both; the fourth side connects the ends of the other two parallel sides, now of different lengths (just as in the trapezoidal rule for numerical integration). Such an approach has likely been considered before, but probably not exploited for various reasons. With the advent of computers, spreadsheets and an improved mathematical awareness, the reasons for retaining the current, very simple model become less and less sustainable.

To understand the effect of putting a slope on the tread of a tax-take over, say, any one band, consider the two Figures 4(a) and 4(b) shown below. In the usual Cartesian coordinate system, the first depicts the scenario as at present, which is a horizontal tread of width $(b-a)$ at, say, a tax-take rate of constant height H (the riser height), and the second depicts that relating to a proposed slope on the tread. The slope is obtained, as shown, by rotating the tread-line in the first Figure through, say, an angle ϑ about a pivot point somewhere along it so as to form a sloping tread between adjacent risers. The pivot point is assumed to be located at a distance $d\big(=\lambda(b-a)\big)$ from its trailing edge, at a height H, and the parameter λ can be chosen arbitrarily. For a fixed value of the angle ϑ, a variation in the parameter λ will appear to move the sloping tread either upwards if λ decreases in value or downwards if it increases. If $\lambda = 0.5$ the pivot point is at the middle of the tread, as per Figure 4(b). The red line indicates a salary point x in the tax band.



(a) (b)

Figure 4: (a) Rectangular Column; (b) Trapezoidal Column

Using the above notations, the tax-take up to the red line in Figure 4(a) is proportional to the area under the curve up to that line. It is $A/100$, where the area A is given simply by the expression $(x-a)/H$; this was used above in the different tax bands to determine results in Figures 2 and 3 via equation (1). In the case of Figure 4(b), geometry considerations alone - involving the formula for the area of a trapezoid - will show without too much difficulty that the associated area A' under the sloping tread up to the red line can be written as

$$A' = A \times M, \tag{2}$$

where M is a multiplicative factor given by

$$M = \left(1 - \frac{2\lambda b + (1-2\lambda)a - x}{2H} \tan(\vartheta)\right). \tag{3}$$

One can alternatively define the sloping tread in Figure 4(b) by the line equation $y = mx + c$, where $m = \tan(\vartheta)$ and c is determined by forcing the pivot point $(x = a + d, y = H)$ to lie on it. Then the integration $\int_a^x y dx$ gives the area under the curve, again as $A' = (x - a)(H \times M)$. It is of interest to note, as earlier, that if the tread is strictly horizontal then $\vartheta = 0$, $M = 1$ and the area $A'(= A)$ changes linearly with x, otherwise it does so quadratically via equation (3).

The procedure now to determine the tax-take in the this scenario is thus a very simple modification to that used above which led to results in Figures 2 and 3. All that is required in each band is to modify the expression for in the previously developed spreadsheet (or software) by multiplying it by the factor M of equation (3), taking care to acknowledge that it will in general be different from one band to the next. By way of an example, values for λ and ϑ (in degrees) shown in Table 2 below were chosen so as to modify (without altering tax-band widths) the tax-take model of Figure 4, to give the resulting picture of sloping treads shown in Figure 5.

Band	λ	ϑ
1	0.2	12
2	0.4	12
3	1.2	12
4	0.3	4.3
5	0.3	1

Table 2: Modified inputs to the treads in Figure 1

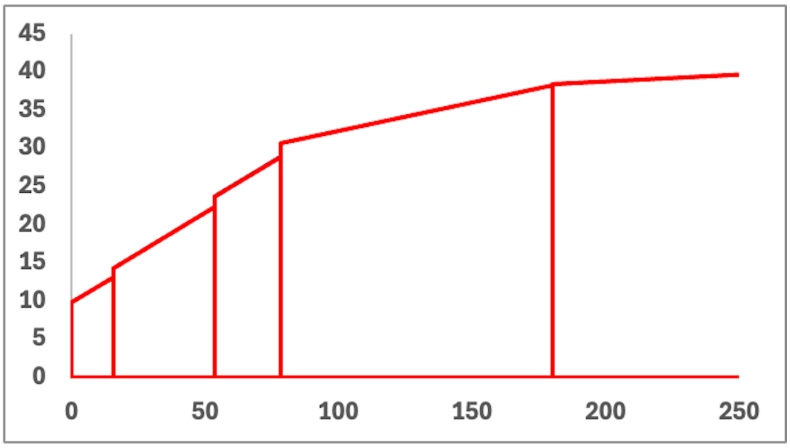


Figure 5: The sloping tread scenario based on tax-bands of Figure 1

Comparing The Tax-Takes of Figures 1 and 5: Results from the schematic of Figure 5, analogous to those in Figures 2 and 3 for the schematic of Figure 1, are shown respectively in Figures 6 and 7.

There does not appear to be a glaring difference between the curves shown in Figures 2 and 6 and the reader could delve deeper into the comparison by examining in detail the data outputs from their spreadsheet or software programme. This will show that there are fractions of a percentage point difference in places that should be acknowledged. With respect to a comparison between Figures 3 and 7, there is a noticeable improvement. The bulge anomaly is ameliorated, the new curve is smoother and the mid-band tax-payer is not as disadvantaged as before. Students and readers might care to make their own inputs re Table 2 and consider other smoothly curved tax-take options.

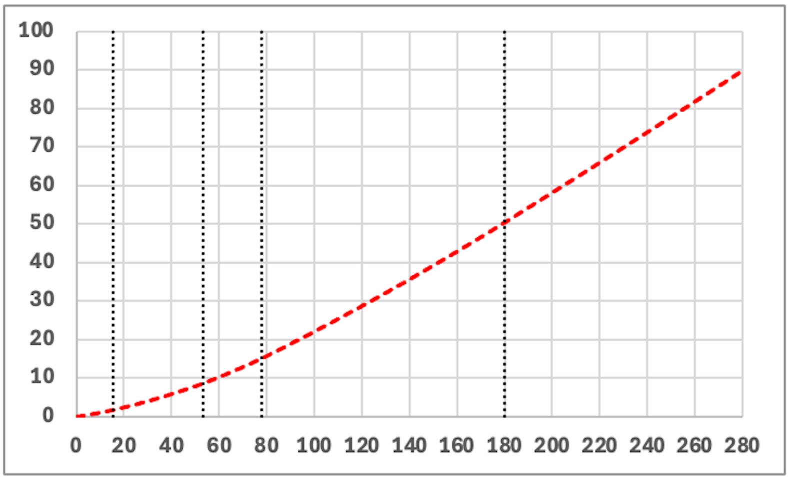


Figure 6: Tax-Take v. Earnings (to be compared with Figure 2)

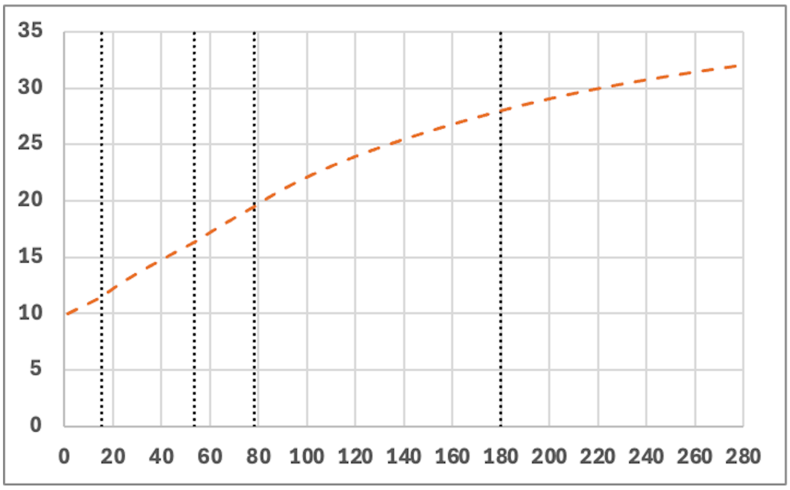


Figure 7: Percentage Tax-Take v. Earnings (to be compared with Figure 3)

Discussion: One could envisage also from the outset a smoothly increasing tax-curve rather than a staircase function from which the required levy (area under the curve) could be obtained either by closed form integration if the shape allows or by numerical integration if it does not. To appreciate as much would require an advanced school level knowledge of the integral calculus and this could be a bridge too far for some, certainly for the less mathematically minded. It would require also a Government stipulation for the shape of such a curve, which could also be a somewhat demanding consideration for politicians. Notwithstanding, it is nowadays possible to develop software that would show, at the press of a button, one's tax liability for a given income without the need to appreciate its theoretical underpinnings. This is the case even now for some under the present system. Nevertheless, it has been demonstrated here that the current method, which employs the notion of a tax-staircase function with horizontal treads, can be improved by simply sloping the treads to iron out anomalies, without the need for anything beyond school level mathematics. The method allows also more degrees of freedom for governments to be creative in their quest to raise, lower or redistribute taxation rates across all bands using only very simple sums.

Footnote: It might be noted with some irony that uneven staircase riser heights and tread lengths were features built into the design of castle-keep towers to thwart attackers bent on securing wealth kept therein. A slope tread approach in that scenario would have led to even greater hardships for invaders bent on a booty-grab.

John D Mahony

PROFILE

Tanya Evans

From Pure Mathematics to Mathematics Education

I should begin with a disclaimer. Everything that follows needs to be taken in context, and appropriately modified or mollified, given my close relationship to Tanya as her husband and a fully signed-up member of her support club. This is, therefore, an admittedly biased account of one mathematician's journey from pure mathematics to mathematics education, and ultimately to trying to improve mathematics education in New Zealand.

Tanya grew up in St Petersburg, Russia. I mention this because I think it is important in understanding both her relationship with mathematics and the trajectory of her career. She started out as a pure mathematician because, to paraphrase how she once explained it to me, she wanted to do "the hardest, most respected subject, at the highest level". There are two things I take from this. First, it tells you something about Tanya's drive. Second, it reflects the rather different place mathematics occupied in Soviet and Russian culture compared with New Zealand. Mathematics was something to be taken seriously, pursued at the highest level, and valued as an intellectual discipline in its own right.

That ambition eventually took Tanya to Rice University in Houston, where she undertook a PhD in pure mathematics on scholarship. She was fortunate to work with John Hempel, one of the leading figures in the field of 3-manifolds. It was perhaps not an obvious meeting of physiques: John was a gentle giant, around 6'6", while Tanya is a considerably more compact 5'1". But they made a formidable advisor-student team, and Tanya flourished under John's guidance, graduating from Rice with her PhD in pure mathematics.

There was, however, another important development during her time at Rice. Part way through the PhD, a new batch of postdocs arrived. One of them was an apparently awesome Kiwi guy who caught Tanya's attention in a course he was teaching to the PhD students on how to teach mathematics. The irony of that particular teaching encounter, given where Tanya's career would eventually lead her, was not apparent at the time — or perhaps she was simply too polite to point it out. That Kiwi guy – me – suggested that Tanya should forget about pursuing the riches of Wall Street, which beckoned to many mathematics PhDs at the time, and instead fly halfway around the world to New Zealand and set up life there.

The next major turning point came with the arrival of children — three of them in total. Tanya stepped away from academic research during the early years of raising the family. Apart from the obvious boundless joy that children bring 24/7 (!), they also gave Tanya an unexpected introduction to the New Zealand mathematics education system. Coming from her Russian mathematical background, Tanya was struck by what she saw in the way mathematics was being taught and learned in New Zealand. This experience played an important part in her eventual decision to change direction when she returned to academic work, within the Department of Mathematics at the University of Auckland.

It is difficult to overstate what Tanya has subsequently achieved. Changing research fields is challenging enough for an established academic. Doing so after taking several years away from research, while raising three young children, is another matter altogether. Tanya returned initially as a Professional Teaching Fellow and has since progressed to Associate Professor. Along the way she has developed a substantial research programme, published extensively in leading journals, built an impressive network of national and international collaborators, supervised PhD students, and been invited to speak at conferences around the world. Having some small appreciation of what is involved in succeeding as a research academic, I find this achievement remarkable.

But perhaps just as importantly, Tanya has increasingly found her voice as an advocate for mathematics education. Her research has increasingly focused on what she sees as underperformance in mathematics education across primary, secondary and tertiary levels, and on what might be done about it. Her concern is not simply academic. She is deeply motivated by the consequences for young New Zealanders and, ultimately, for the country.

New Zealand has a proud history of mathematics achievement, and Tanya is passionate about finding ways to improve the mathematical experiences and outcomes of Kiwi children. She is certainly not alone in this endeavour. There are many people across the mathematics and education communities working towards the same goal. But Tanya has contributed an enormous amount of time, energy and expertise to the effort. Her research has helped inform public discussion, policy and practice, and she has most recently contributed to the development of New Zealand's updated mathematics curriculum for secondary schools.

The results of these changes will, of course, take time to become apparent. But knowing Tanya, she is unlikely to be waiting quietly to see what happens. Indeed, as I write this, she has just been giving an interview to 95bFM about her recent research finding concerning outperformance of girls-only schools as STEM pathways
https://www.auckland.ac.nz/en/news/2026/08/21/research-explores-girls-only-schooling-and-stem-pathways.html.

This is fairly typical of Tanya: researching, communicating, challenging assumptions, and seeking to make a meaningful difference to New Zealand society. For someone who began her career wanting to pursue the most difficult and respected branch of mathematics at the highest possible level, it is perhaps fitting that she has ended up tackling a problem that she considers both difficult and important: how do we, as a country, help more young people understand, enjoy and succeed in mathematics?

I am immensely proud of the passion that drives her to keep asking that question — and even prouder of what she is doing to help find the answers. So, there you have it: a very biased overview of the intersection of Tanya's life with the world of mathematics in New Zealand. I can't wait to see what's next.

Richard Evans (Tanya's husband
and alumnus of the Department of Mathematics
at the University of Auckland)

Editor's note: As luck has it, Tanya has just had a media release by UoA about her recent research that could be of public interest. Please check it here:
https://www.auckland.ac.nz/en/news/2026/08/21/research-explores-girls-only-schooling-and-stem-pathways.html

LOCAL NEWS

AUCKLAND UNIVERSITY OF TECHNOLOGY

SCHOOL OF ENGINEERING, COMPUTER AND MATHEMATICAL SCIENCES

Events

Mathematics-in-Industry New Zealand 2026

Auckland University of Technology (AUT) hosted Mathematics-in-Industry New Zealand (MINZ) 2026 between 22 and 26 June, 2026, with Dr Hammed Fatoyinbo and Dr Ryan Ip being the Co-Directors. This year, we were able to put up three challenges sponsored by two industry partners: Horizons Regional Council (which provided two challenges), and Malaghan Institute of Medical Research & BioOra. Over the 5 days, approximately 70 participants from all over the country attended and contributed to the event. We aim to source more challenges for next year, and we look forward to welcoming everyone once again at AUT in 2027.

MINZ 2026 hosted by AUT

Overseas Visit

Under the invitation of Prof Zhi Liu, Prof Jiling Cao visited the University of Macau between 25 and 30 May, where he presented a seminar talk at the Department of Mathematics there and attended the doctoral oral examination of Yu Jiang as an external examiner.

Conference Attendance

Dr Yiming Ma organised a workshop in China in April 2026 titled "Pore Fluids and Slow Slip Events: From Physical Mechanisms to Mathematical Modelling and Machine Learning". Two AUT students from my research team also attended in person. The workshop brought together five speakers from different institutions and approximately 100 participants. Each speaker presented on relevant topic areas, followed by discussions focused on progress and the next steps for collaborative workstreams.

During the same trip, Dr Yiming Ma delivered three invited talks on the change-point detection methods he developed for time-series analysis, including their application to short-term slow slip event detection. These talks were delivered at School of Information Science and Mathematics (Yangtze University), School of Geophysics and Measurement-Control Technology (East China University of Technology), and School of Artificial Intelligence (Hubei Polytechnic University). The presentations supported knowledge exchange and helped identify further opportunities for collaboration.

In May 2026, Dr Yiming Ma attended the European Geosciences Union General Assembly in Vienna, Austria, one of the world's largest geoscience conferences. The event ran for approximately one week and attracted more than 20,000 participants, both in person and online. Dr Yiming Ma delivered a presentation showcasing our work and received valuable feedback from researchers across the international geoscience community to inform further refinement.

In June 2026, Dr Yiming Ma concluded the 2025 New Zealand–China Tripartite Partnership Fund, funded by Education New Zealand. The funder was satisfied with the outcomes achieved and pleased to see the partnership with Chinese universities continue to develop.

Yiming at the EGU conference

Seminars of the Mathematical Modelling and Analytics Research Centre

Dr Gaurav Gupta from Wenzhou-Kean University delivered a talk "Advanced Statistics and Machine Learning for Medical Imaging: From Theory to Practice" on 16th July 2026.

Dr Ben Wilks from Adelaide University delivered a talk "Mathematical modelling of piezoelectric plate wave energy converters" on 28th July 2026.

Wenjun Zhang

UNIVERSITY OF AUCKLAND

DEPARTMENT OF MATHEMATICS

Nic Smith has now arrived as the Vice Chancellor of Waipapa Taumata Rau University of Auckland.

The inaugural cohort of 105 students from Northeastern University Qinhuangdao (NEUQ) have arrived under a Transnational Education partnership. The programme is jointly run by the Mathematics and Engineering Science departments. The students have already completed three years of the shared delivery programme at their home university. During this time they have taken 8 courses that were co-taught by a University of Auckland lecturer. Now they are taking third year courses.

The department has two new post-doctoral researchers Audrey Tyler and Gaurish Korpal.

Congratulations to staff member Malia Puloka for completing a PhD in Statistics Education with the title "Exploring Year 9 students' reasoning with categorical data - with a focus on posing investigative questions". The supervisors were Stephanie Budgett and Maxine Pfannkuch.

Florian Lehner, Bernd Krauskopf, Hinke Osinga, Arkadii Slinko, and Tom ter Elst are all on sabbatical this semester.

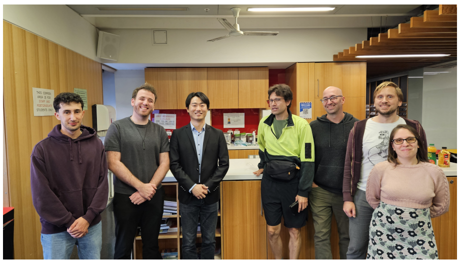
The 2026 Auckland Mathematical Olympiad took place on Saturday 2nd May, organised by Phil Kane, Arkadii Slinko, and an army of helpers including some former contestants.

The South Auckland Maths Competition (SAMC) finals took place on campus at the Sports Centre Hiwa on August 11 and 12. This event is supported by the John and Margaret Kalman Charitable Trust.

The Student Research Conference is an annual event that has been organised every year since 2007. It is an opportunity for undergraduate, graduate and post-graduate students to present their research, share it with other students and faculty, and receive feedback in a friendly and supportive atmosphere. There are cash prizes of $500 each. The event was held this year on June 8th. A photo is attached of winners Ofri Adiv, Đorđe Mitrović, Yucheng Hua and judges Sione Ma'u, Ofer Marmur, Florian Lehner, and Marie Graff. Honorable mentions were made to Nasrin Nikbakht and Matthias Chan.

We hosted visiting NEUQ lecturer Haihui Cheng in August.

Other recent visitors include former PhD students Dana C'Julio and Renzo Mancini, Alexander Elzenaar (Monash), Mirian Tsulaia (Okinawa Institute of Science and Technology), Mehtap Özen (Aksaray University) who gave a series of lectures on Arts in Mathematics Education, Natalia Mcalister Caffarel (Monash), Andy Hammerlindl (Monash), Marta Lewicka (Pittsburgh), and Len Bos (Verona).



Student award winners

Steven Galbraith

DEPARTMENT OF ENGINEERING SCIENCE AND BIOMEDICAL ENGINEERING

The department has welcomed 104 students from our partner institution of Northeastern University Qinghuangdao (NEUQ). The students are enrolled in Part III Engineering Science and Mathematics courses this semester, having completed the first two years of their programme in China.

The Engineering Science courses are *Computational Techniques 2* (ENGSCI331), taught by Dr Julia Musgrave, Dr Liam Fisher, and A/Prof Andreas Kempa-Liehr, and Engineering Machine Learning 2 *ENGSCI304*, taught by Dr Oliver Maclaren and Andreas.

ENGSCI331 has a long tradition in the department for teaching technical mathematics and its implementation using modern programming languages.

ENGSCI304 is a new course that teaches data-driven modelling for engineering applications in unsupervised learning, time-series machine learning with tsfresh, as well as learning from image, video and text data, including object tracking, attention and embeddings, large language models, retrieval and agentic systems.

Andreas Kempa-Liehr

UNIVERSITY OF WAIKATO

DEPARTMENT OF MATHEMATICS AND STATISTICS

Sean Oughton has finished his period of study leave while Jacob Heerikhuisen has now started his. Sean's leave included a 5-week trip to collaborators at the University of Delaware as well as a 5-week trip to Europe. While in Europe, he continued his collaboration at Ruhr Universität Bochum and attended a workshop in Bern as well as the Solar Wind 17 conference in Bath, UK. He had a very productive time, but did encounter some of the heat waves in Europe.

We congratulate Raiza Corpuz on her April graduation with a PhD. Her thesis title was "Iwasawa theory for tensor products of Hilbert modular forms". She was supervised by Daniel Delbourgo, Antonio Lei (University of Ottawa), and Tim Stokes. The abstract of her thesis appears elsewhere in this Newsletter.

Stephen Joe

MASSEY UNIVERSITY

SCHOOL OF MATHEMATICAL AND COMPUTATIONAL SCIENCES

Chris Scogings, the inaugural Head of the School of Mathematical and Computational Sciences, passed away on May 17 after a short illness. A tribute to his memory is here. Tammy Lynch had been deputy and acting Head of School before Chris's illness and has been appointed as the new Head of School.

In June, Winston Sweatman was an invited lecturer at the CELTA-Cortina Advanced Study Institute (ASI) Summer School "Dynamic Solar Systems: The exploration of exoplanetary and solar system bodies" on the Isle of Skye in Scotland. The school is a few-yearly event endorsed by the International Astronomical Union and was funded by the Scottish Universities Summer School in Physics. Participants came from around the globe and included three IAU Division presidents. While over there, Winston also attend a reunion at his alma mater Magdalen College, Oxford which continues to thrive.

In June and July Carlo Laing visited the Vrije Universiteit Amsterdam and the University of Potsdam. He also attended the conference "Half a century of the Kuramoto model: Explaining emergent order in time and space" held at Physikzentrum Bad Honnef in Germany.

To clarify the last report, it is only School of Mathematical and Computational Sciences staff in Albany who have been moved into an open plan environment. Staff in Palmerston North still have individual offices.

Carlo Laing

VICTORIA UNIVERSITY OF WELLINGTON

SCHOOL OF MATHEMATICS AND STATISTICS

We have very few interesting news from Te Herenga Waka in Wellington to share:

Te Herenga Waka has a new Vice-Chancellor. Professor Bryony James, previously the University's Provost, took up the role on 12 June 2026, succeeding Professor Nic Smith, who left to become Vice-Chancellor of the University of Auckland. Originally from Cornwall, Professor James has worked in the New Zealand tertiary sector for more than three decades, including as Deputy Vice-Chancellor (Research) at Waikato and Deputy Dean (Research) in Engineering at Auckland. Her research background is in materials engineering, latterly at the intersection of materials, food, and nutrition. The School wishes her every success in her new role.

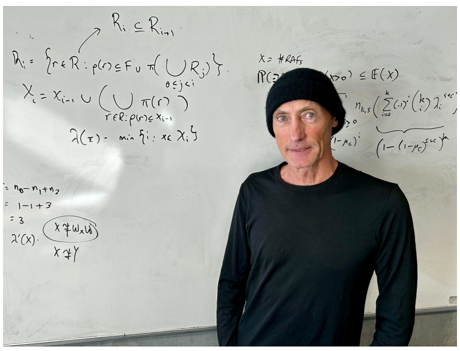
Closer to home, the School of Mathematics and Statistics is farewelling Dr Becky Armstrong, who is leaving Wellington for a position in Auckland. Becky joined us as a postdoctoral fellow in August 2023, following earlier stints here as a lecturer in 2020 and a visiting scholar in 2021, and before that a postdoctoral position at the University of Münster. She works in operator algebras (twisted C^*-algebras of groupoids and higher-rank graphs, and related ring-theoretic questions) and has been a regular collaborator with Professors Lisa Orloff Clark and Astrid an Huef. Alongside her research she has lectured various courses since 2023 and co-supervised students at Honours, Master's, and PhD level. She will be much missed, and we wish her well in Auckland.

Dimitrios Mitsotakis

UNIVERSITY OF CANTERBURY

SCHOOL OF MATHEMATICS AND STATISTICS

UC Press Release
The University has a press release about our very own Professor Mike Steel and how some of the earliest forms of life on Earth may have emerged around four billion years ago. Well done Mike!



Mike Steel with some math.

Invited Speaker at the ICM
Our head of School Professor Clemency Montelle was selected as an Invited Sectional Speaker at this year's

International Congress of Mathematicians in Philadelphia, which brought together around 3,000 mathematicians from around the world. Her lecture explored the emergence of combinatorial thinking in classical India, drawing on previously unstudied Sanskrit manuscripts and examining the development of mathematical ideas from Sanskrit prosody, music, and related traditions. Well done Clemency!

Clemency at the ICM.

Chris Stevens

UNIVERSITY OF OTAGO

DEPARTMENT OF MATHEMATICS AND STATISTICS

Boris Baeumer and *Jörg Hennig* have been recognised for 25 and 15 years of continuous service to the University of Otago, respectively. They received certificates and service pins. Unfortunately, this recognition of longer-term service was only introduced recently, meaning that several colleagues with impressive service records have missed out. Such is life…

This year, the Department introduced quarterly morning teas, providing staff and postgraduate students with a regular opportunity to catch up with colleagues over tea, coffee and refreshments. The second of these was held in August in the Science III common room, and appears to have been sufficiently successful to justify continuing the experiment.

PhD student *Thomas Tawfik* won the overall prize for the Participant Talks at the 20th AMSI Winter School, held in Brisbane in July. The ten-minute participant talks on research or thesis topics were designed to encourage sharing research and building networks. With $400 in prize money available, the talks were rather competitive. Thomas took the top prize, with Henry Wood from the University of Queensland as runner-up.

Welcome back to *Nico Mocus*, who has taken up a postdoctoral position working with Fabien Montiel on the modelling of sea ice. Nico had previously completed his PhD at Otago in 2023. Afterwards, he was a postdoc at ISTerre (Institut des Sciences de la Terre/Institute of Earth Sciences) in France. Now we are very happy to have him back.

Jörg Hennig

PhD SUCCESS

Pabasara Athukorala (University of Auckland.)

Title: Analysis of a Lattice-Code-based Cryptosystem and a variant of the Generalised Birthday Problem.
Supervisors: Steven Galbraith and Jurij Volcic

Abstract:
Heteroclinic cycles and networks are flow-invariant structures in a dynamical system composed of saddle-type objects and connecting heteroclinic orbits. Near an attracting heteroclinic cycle or network, trajectories spend increasingly long periods of time near each equilibrium without converging to any one of them. A trajectory near a heteroclinic cycle always follows the same sequence of equilibria, whereas near a heteroclinic network trajectories can switch between subcycles, and so their analysis is more complicated.

The rise of quantum algorithms capable of breaking widely deployed public-key schemes has spurred the search for post-quantum alternatives. Lattice-based and code-based cryptography are leading candidates, each with strong theoretical guarantees but different trade-offs. This thesis engages with both paradigms through two complementary directions: the study of a lattice-code scheme and the analysis of new algorithmic problems with cryptographic applications.

The first part focuses on the scheme of Li, Ling, Xing, and Yeo (LLXY), which introduces lattices supporting efficient Bounded Distance Decoding. We analyse the structure of these polynomial lattices, reformulate the construction as a Key Encapsulation Mechanism (KEM), and propose refinements that yield compact ciphertexts while ensuring security against adaptive Chosen Ciphertext Attacks. A comprehensive cryptanalytic evaluation examines resistance to state-of-the-art lattice and decoding attacks, provides conservative parameter choices, and highlights both the strengths and open challenges of this approach.

The second part investigates algorithmic problems inspired by the generalised birthday framework for $\{-1,1\}^m$ vectors. We develop new Wagner-style k-list algorithms, analyse their complexity, and demonstrate applications to a new version of the Inhomogeneous Short Integer Solution (ISIS) assumption underlying a recent blind signature scheme. Our results reveal new combinatorial attacks, clarify the hardness of this assumption, and extend the framework to structured sums with arbitrary targets, supported by theoretical and experimental analysis.

Together, these contributions shed light on less studied directions of post-quantum cryptography and highlight the need for further scrutiny of both new constructions and their underlying hardness assumptions.

Guanhao Li (University of Auckland.)

Title: Combinatorics of Condorcet Domains.
Supervisors: Tom ter Elst and Dominik Peters

Abstract:
Condorcet domains are sets of linear orders in which the majority relation of any profile with an odd number of voters is always transitive. One of the major research questions in the literature focuses on characterising maximal Condorcet domains. The class of peak-pit maximal Condorcet domains has been a main object of investigation in the search for large Condorcet domains. Indeed, for four to eight alternatives, it is known that all largest-size maximal Condorcet domains are peak-pit maximal Condorcet domains. Interestingly, all such known maximal Condorcet domains are also connected. Connected maximal Condorcet domains form another important class of Condorcet domains whose internal structure allows for smooth transitions between preferences, and have numerous practical applications in preference aggregation and social choice. When imposing the assumption of maximal width, peak-pit maximal Condorcet domains are known to be connected. However, it has remained an open problem whether this holds for domains that are not necessarily of maximal width. In this thesis, we establish the equivalence between connected and peak-pit maximal Condorcet domains. So the condition of maximal width is superfluous. Furthermore, we show that within the class of maximal Condorcet domains, the property of connectedness is equivalent to that of being directly connected. This demonstrates that connected, directly connected, and

peak-pit maximal Condorcet domains, previously considered distinct classes, are in fact the same. Additionally, we prove that the class of maximal peak-pit Condorcet domains coincides with the class of peak-pit maximal Condorcet domains. These results unify key classes and advance the theoretical foundations of the field, opening new avenues for investigating larger Condorcet domains and unresolved problems in their combinatorial structure.

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Raiza Corpuz (University of Waikato.)

Title: Iwasawa theory for tensor products of Hilbert modular forms.
Supervisors: Daniel Delbourgo, Antonio Lei, and Tim Stokes

Abstract:
The main conjecture of Iwasawa theory bridges two seemingly disjoint areas of mathematics: arithmetic and analysis. In particular, it provides a deep connection between the p-adic L-function which interpolates critical values of the complex L-series, and the Selmer group which is an important object used to control the growth of arithmetic data. In this thesis, we explore some questions that arise organically from the Iwasawa Main Conjecture, applied to Hilbert modular forms and their tensor products.

Greenberg and Vatsal developed an approach to study the main conjecture for a large class of elliptic curves simultaneously. They showed that if a given pair of elliptic curves share the same residual Galois representation, then the main conjecture holds for one if and only if it does for the other. The first part of this thesis investigates whether the ideas of Greenberg and Vatsal work for elliptic curves twisted by a CM-Hecke character. The second part of this thesis then extends the method to treat non-ordinary classical modular forms (without any twist). The former permits one to study rational elliptic curves base-changed to an arbitrary number field, whilst the latter requires techniques crafted by Pollack and Kobayashi in the early 2000s.

Finally, the third part of this thesis concerns Euler systems and their applications to the arithmetic of motives arising from modular forms—these objects are indispensable tools which can be used to prove half of the Iwasawa main conjecture. However they often give rise to additional "junk" error terms, as well as causing the p-adic L-function to be stripped away of certain bad Euler factors. For modular forms and their tensor products we devise

a method to dispose of the error terms and to replenish the missing factors, allowing one to genuinely obtain half of the main conjecture free from any discrepancies.

Maryam Yassi (University of Otago.)

Title: Applying machine learning and deep learning to analyse clinical cancer epigenetic data.
Supervisors: Matthew Parry, Aniruddha Chatterjee

Abstract:
Epigenetic alterations, particularly DNA methylation changes, play a critical role in cancer development and progression, offering valuable biomarkers for diagnosis, prognosis, and therapeutic strategies. With advances in high-throughput sequencing technologies, the analysis of DNA methylation data has become increasingly crucial. However, the complexity, heterogeneity, and scale of clinical epigenetic datasets present significant analytical challenges.

This PhD thesis makes three primary contributions to the field of computational cancer epigenetics, focusing on the analysis of clinical cancer epigenetic data—specifically DNA methylation patterns derived from circulating cell-free DNA (cfDNA)—for non-invasive cancer dfiagnostics.

First, we develop and evaluate DNAmBERT, a novel Transformer-based deep learning model designed for non-invasive cancer diagnosis using cfDNA methylation data. DNAmBERT integrates k-mer tokenized DNA sequences with read-level methylation haplotype information through a structured concatenated input representation, enabling joint modelling of sequence and epigenetic context, enabling robust binary classification of tumour-derived versus normal cfDNA across diverse sequencing platforms and cancer types. The model consistently achieves high performance in terms of accuracy, sensitivity, specificity, and AUC.

Second, we extend DNAmBERT for multi-cancer detection. By training the model across several cancer types—including colorectal, lung, and liver—we demonstrate its ability to accurately distinguish among multiple malignancies and detect early-stage cancers, underscoring its utility in pan-cancer screening applications.

Third, we apply a transfer learning framework that enables DNAmBERT to generalize across cancer types. The model is initially pre-trained on specific cancer types and subsequently fine-tuned on further cancer types for both binary and multi-cancer classification. This approach leverages shared epigenetic signatures and adapts the pre-trained representations to new contexts, achieving strong performance under data-scarce conditions and demonstrating its versatility for diverse clinical applications.

To support these contributions, we conducted a comprehensive systematic literature review of deep learning (DL) applications in cancer epigenetics. This review highlights DL applications for classification, CpG methylation state prediction, biomarker discovery, and survival prediction using methylation and multi-omics data, and it informs the design and scope of DNAmBERT.

Overall, this thesis demonstrates that integrating advanced Transformer-based architectures with rich cfDNA-derived epigenetic features can significantly enhance the accuracy, interpretability, and scalability of non-invasive cancer diagnostic tools.

Taylor Jon Hamlin (University of Otago.)

Title: Fit foragers facilitating fat fledglings: the foraging and reproductive strategies of Adélie penguins (Pygoscelis adeliae) in the Ross Sea.
Supervisors: Matt Schofield, Dean P. Anderson, Philip Seddon

Abstract:
Animal movement sits at the crossroads of multiple ecological applications, and its study can provide valuable insights into a range of patterns and processes. Within the field of movement ecology, there is a growing demand for models that forge links between animal movements and other related ecological processes. Related to this is

increased interest in how Adélie penguins (Pygoscelis adeliae) forage in response to different conditions, and how that variation impacts their chick-rearing behaviour. This research is critical, as Adélie penguins, particularly their foraging behaviour and population demography, have been identified as key priorities in the management of an internationally significant conservation zone (Ross Sea marine protected area [MPA]). The broad research goal of this thesis was to describe in better detail the foraging patterns of Adélie penguins, and then construct models that mechanistically link the foraging movements of breeding adults to the health of their chicks. Through tests of the field methodology, both adult foraging behaviour and the growth and survival of chicks were found to be impacted by the deployment of external, but not internal, tags on parents. Through state space models of movement, Adélie penguins were found to actively forage almost constantly while at sea, rather than seeking particular sites or habitats. Additionally, those models revealed that a range of covariates, including sex, fledgling success, and sea ice concentration were associated with the types of foraging exhibited. Through mechanistic modelling, variability in foraging behaviour had a demonstrable impact on the growth and survival of chicks, and more efficient foragers tended to have larger chicks with lower mortality rates. The model development process revealed several under-reported issues associated with the implementation of common modelling choices in animal movement research. In particular, the use of polar coordinates can generate discontinuities in their joint distributions if their dependency is not accounted for. Overall, this research contributed to understanding of Adélie penguin foraging behaviour, which is relevant for monitoring the effectiveness of the Ross Sea MPA. It also demonstrated how the movement of animals could be mechanistically linked to other ecological processes, highlighting the range of insights such approaches can offer. Overall, this research underscores the value of cross-disciplinary work and the potential to advance progress in multiple fields.

REPORTS ON EVENTS

Report on ICM 2026 - Philadelphia

The international congress of mathematicians happens once every 4 years. This time it was a bit more special for two reasons. Firstly, Covid and war pushed the last planned meeting to be only online in 2022; secondly this was the first time the names of the Fields medal winners (see link: https://www.mathunion.org/imu-awards/fields-medal/fields-medals-2026) were leaked due to poor HTML coding (see link: https://finance.biggo.com/news/65cef2e9-6760-4366-9d9f-aa007b53e6de). So finally on 23rd July 2026, about 4800 mathematicians collected in-person in Philadelphia for the nine-day event.

Figure 8

I got to attend my first ICM (as a representative of NZMS and RSNZ) and the opening ceremony was in true style with the West Philadelphia band (accompanied by one musically inclined mathematician) playing us into the mood for the conference (see picture 8). The diversity both across areas of mathematics and personalities of the medal winners was noticeable. The range included a mathematician moonlighting as an improv comedian, to someone who was not sure of their mathematical ability, that they planned to become an architect after ‘trying’ mathematics for five years! Each Fields medalist had a lovely two-minute video describing their journey (see link: https://www.youtube.com/playlist?list=PLI99X7D-YyaU) and I took way one common denominator: regular walks in nature that each of them talked about. Seems like a good thing to include to encourage physical health, mental health and mathematical inspiration!

Of course, no mathematical gathering these days is immune to questions and discussions on AI. There were many talks, a panel discussion and even a public talk (by Prof. Terence Tao) on it. The public talk focused on both formulating the question that we all think about as a conjecture:

“At some point in the near future, some AI tools will, at some expense, and with some level of human supervision be able to successfully accomplish some research-level mathematical tasks...”

He wanted us to consider each word ‘some’ as a placeholder for a variable. From such a familiar start point, Prof. Tao walked us through some subtleties of what our goals are as a community to justify mathematical work.

Just taking one possible reason, that of solving as many open problems as an example, Prof. Tao then proceeded to walk through the various steps where AI is/can be efficient, e.g., in creating a proof, maybe even logically checking a proof. He argued that AI is/may not be able to reproduce/replace humans in other crucial steps involved in ‘digesting’ a proof (see picture 9): such as proof exposition, publication and acceptance by the community in a way that allows future mathematical ideas to be built upon it. Some food for thought!

I had the luck to watch a fellow Kiwi, Prof. Clemency Montelle, give a amazing talk on the origin of combinatorics in classical India (see picture 10). She combines analysis of ancient texts that relate astronomical observations

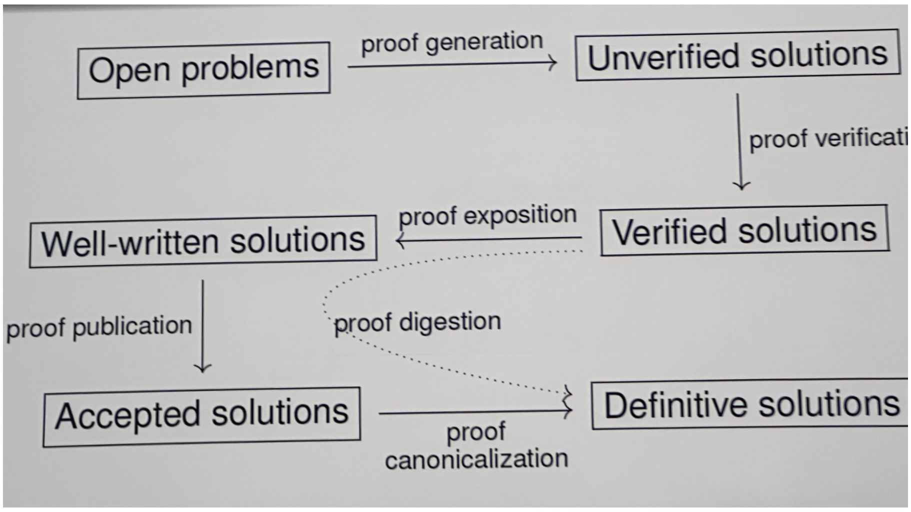


Figure 9

and the development of mathematical insights in texts from ancient India. Her history of mathematics talk was an amazing introduction to how combinatorics was developed and studied not as its own discipline, but rather as a requirement for interesting musical rhythms.

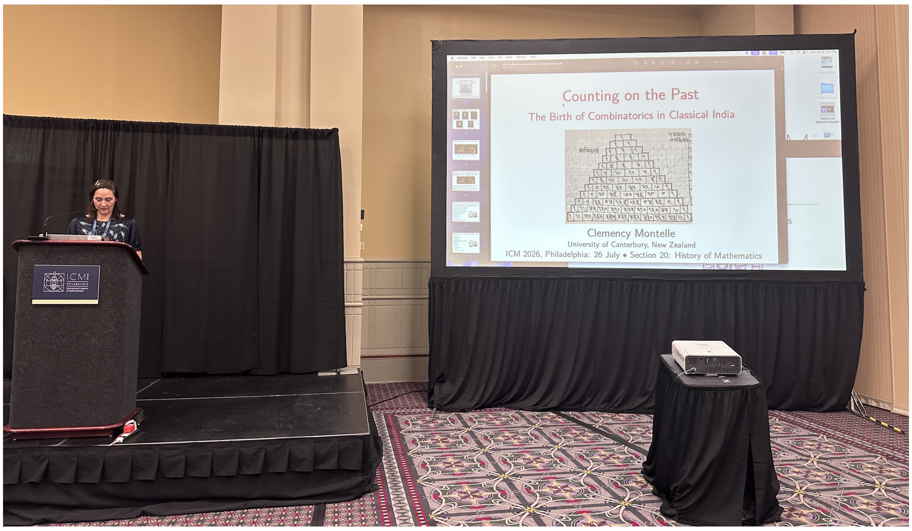


Figure 10

The ICM also had a lot of creative mathematical works displayed in the exhibition hall and also screened multiple movies with mathematical themes. My favorite (not for its camera angles though) was a documentary about Felix Klein. It explained Klein's obsession with changing how mathematics was taught at German schools at the time and how he was responsible for introducing graphs and geometric figures in mathematical books, which until then were only filled with words and equations! Weaving through his life, we learn about his collaboration and feud with Sophus Lie along with a graphic introduction to non-Euclidean geometries.

The next such ICM will take place in 2030 in Glasgow (see link: https://icm2030.kenes.com/) and did you know that students and early career researchers from Aoteoroa New Zealand can apply to attend for free? Look up the conference website in a year or two!

Priya Subramanian
(University of Auckland)

Student report

About me

Kia ora koutou, my name is Cécilia Olivesi, I am a third-year PhD student at the University of Auckland (UoA) in the Auckland Bioengineering Institute (ABI) under the supervision of Dr. Claire Miller and Prof. Alys Clark. My project focuses on developing a mathematical of angiogenesis (blood network growth) within lesions during the onset of endometriosis (a chronic gynaecological disease). I use a hybrid agent-based and continuum model of angiogenesis that I couple with a Poiseuille model of blood flow.

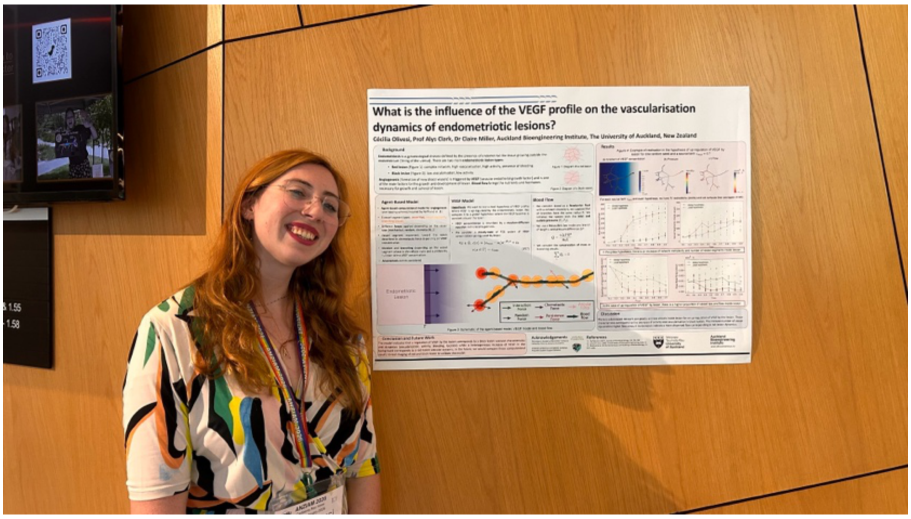
Thanks to the NZMS student travel grant, I was able to attend the 2026 ANZIAM conference in Canberra and to visit the Melbourne Mathematical Biology Group at the University of Melbourne for a week after the conference.

General

ANZIAM conference

During the 2026 ANZIAM conference, I attended a variety of presentations that emphasized the diversity of applied mathematical research in New Zealand and Australia. I was pleased to reconnect with researchers that I had met last year at the 2025 ANZIAM conference in Coffs Harbour and to encounter new faces during the networking events. I presented my agent-based and blood flow models for vascularisation in endometriotic lesions in a contributed talk on the first day of the conference and I received very valuable feedback. I attended various presentations on different applied mathematical fields such as epidemiology or ecology and I was able to engage in interesting conversations with researchers using agent-based models for different problems.

I attended two workshops held respectively at the beginning and end of the conference: the Early Career Workshop (ECW) and the Mathematical Biology Special Interest Group Workshop (MBSIG). During the ECW, we learned how to improve our scientific presentations and our networking skills. We also learned about the different possibilities after a PhD: staying in academia and how to apply for grants, work with/in industry and government. Those discussions were very beneficial, especially since I am in my last year of PhD and I am starting to consider postdoctoral research career plans. During the MBSIG workshop, I presented a poster on the influence of VEGF (vascular endothelial growth factor) profile on the vascularisation dynamics of endometriotic lesions which led to very interesting conversations and feedback from experts in agent-based modelling and biology.



Melbourne visit

After the conference, I flew from Canberra to Melbourne and I spent a week visiting the Melbourne Mathematical Biology Group (MMB Group) at the University of Melbourne. The purpose of this visit was to learn more about the group's current research activities, explore potential collaboration opportunities, receive feedback on my research and develop my academic network.

During my visit, I met with a few professors and we discussed about our respective research. Prof. Jennifer Flegg and Prof. James McCaw also gave me advice regarding my postdoctoral research career plans such as where and when to start looking for a postdoctoral positions, what to expect in academia and how to work with people from different fields. I had a productive talk with Prof. James Osborne about my code for agent-based model and blood flow. He gave me advice on how to couple both models. I work with the library Chaste in C++ that he developed alongside his colleagues at Oxford and it was a great opportunity to be able to get his feedback. I also met with A/Prof. Sarah Holdsworth-Carson who is a biologist I have been working with since the beginning of my PhD for analysing biological images of endometriotic lesions. We discussed potential applications of my models that could be validated by those images. This encounter was very useful to finalise the scope of the next research questions I plan to answer in my thesis during this last year of PhD.

I also had the honour to be invited to present my research during the group weekly seminar. My presentation was divided in three main topics: I started by presenting my hybrid agent-based and continuum model of angiogenesis; I showcased the preliminary results I obtain with the blood flow models that I am currently developing; I finished with the image analysis I performed on tissue imaging of endometrium to identify computationally blood vessels. I am grateful for this professional opportunity to showcase my work to the group seminar event and to receive valuable feedback, which would not have been possible without the financial support of NZMS.

Small conclusion
Attending the 2026 ANZIAM conference and then visiting the MMB Group was an enriching experience both professionally and personally. I was able during those two weeks in Australia to engage with different researchers from different fields and establish connections for future collaboration. I would like to thank again NZMS and the NZMS student travel grant for supporting this trip that was an important professional opportunity for my research and academic career.

Expenses
You can find below the summary of the main costs of this trip:

Description	**Cost**
Transport	\$959.56
Accomodation	\$561.24
Conference registration	\$621.50
Food etc	\$200
Total	**\$2,333.80**

Cécilia Olivesi
(Auckland Bioengineering Institute,
University of Auckland)

GENERAL NOTICES

NZMRI Meeting January 2027

Dear Colleagues:

The 2027 NZMRI Summer Meeting will be held at the Function Centre at Tahuna Beach, Nelson, from 9-16 January 2027.

The theme of this summer meeting is Combinatorics, Probability and Symmetry.

Lecturers. It will feature six outstanding researchers, each giving 3 lectures:

- Anita Liebenau (University of New South Wales)
- Brendan McKay (Australian National University)
- Sarah Peluse (Stanford University)
- Julian Sahasrabudhe (University of Cambridge)
- Marius Tiba (EPFL)
- Geordie Williamson (University of Sydney)

Dates and schedule
Recommended arrival time: evening of Saturday 9 January.
Recommended departure time: midday Saturday 16 January.

Accommodation
Accommodation is reserved for students at Tahuna Beach Holiday Park (where the Function Centre is located).

All other participants must arrange their own accommodation.
Some nearby motels are listed on the meeting website.

Support for NZ-based students
We will cover the cost of accommodation and catering for all NZ-based students.
Honours, Masters and PhD students are strongly encouraged to apply for Kalman Summer Scholarships which will cover travel costs. See the website for the easy application process.

Support for NZ-based academics
We will cover the cost of catering for NZ-based academics and accompanying family, and subsidise accommodation costs up to $500.

Website and registration
See the meeting's website https://nzmri2027.github.io/ for more details.
A registration form will be available there during August - November 2026.

We look forward to welcoming you to the meeting!

Best wishes from the organisers.

Rajko Nenadov (Christchurch)
Eamonn O'Brien (Auckland)

NZMS NOTICES

NZMS Colloquium 2026 – Registration open!

Dear NZMS members,

Registration for the 2026 NZMS Colloquium is now open. We warmly invite you to register on the Colloquium website: `https://nzmathsoc.org.nz/nzms-colloquium-2026/`

The Colloquium is hosted by the University of Otago in Dunedin. There will be a welcome reception on the evening of Monday 30 November, and talks will be held December 1-3.

The early-bird registration fees are $500 for NZMS members, $550 for non-members of the NZMS, and $275 for students. Early-bird registration ends on 1 November; the standard registration fees will be $75 more than the early-bird registration fees. For bulk registrations, please contact the Colloquium organisers.

Secondary-school teachers are also invited to register to attend the education session, which is tentatively scheduled for the morning of Thursday 3 December.

Abstract submission will be handled separately from registration. A form for abstract submission will be available before the end of August.

The plenary speakers at the Colloquium are

- Astrid an Huef (Victoria University of Wellington)
- Ofer Marmur (University of Auckland)
- Fabien Montiel (University of Otago)
- Rajko Nenadov (University of Canterbury)
- Katerina Nik (King Abdullah University of Science and Technology)
- Paul Zinn-Justin (University of Melbourne)

We look forward to welcoming you to the Colloquium!

The organisers

NZMS Financial assistance

The NZ Mathematical Society offers two kinds of funding for NZ mathematicians: NZMS Student travel grants (financial support etc.) and NZMS Financial Assistance grants (funds for mathematical related activity).

There are quarterly deadlines for applications. The deadline for applications for 2026 are February 15, May 15, August 15, and November 15.

Applications must be made at least 1 month in advance of the travel or event. Please contact the secretary secretary@nzmathsoc.org.nz to get the application forms, and guidelines on how to apply.

Geertrui Van de Voorde (Secretary)