

Slovenian Discrete and Applied Mathematics Society Joins the EMS

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Slovenian Discrete and Applied Mathematics Society, founded in December 2016.

At the EMS council meeting in Prague, 23–24 June 2018, the young Slovenian Discrete and Applied Mathematics Society (SDAMS) was accepted as a full member of the EMS. There are now 56 full member societies from 44 countries. Slovenia joined the group of countries that have more than one full

member society: Spain (4), Italy (3), UK (3), France (3), Germany (2) and Russia (2). It is the first European country with a member society that has the word *discrete* in its title and the first society from a country behind the former Iron Curtain that has the name *applied* in its title.

It seems to be a bit unusual for a country of two million inhabitants to have two mathematical societies. However, we want to show that this is a natural step in the development of mathematics in Slovenia.

Firstly, we present a brief overview of the historical development of Slovenian mathematics.

Historical development of mathematics in Slovenia *Habsburg rule until 1918*

For most of its history, Slovenia was under Habsburg rule, which ended in 1918 after World War I. Slovenian mathematicians who were born in Austria, or later in the Austro-Hungarian empire, include Herman de Carinthia, also known as Herman Dalmata, who translated Euclid's *Elements* from Arabic to Latin, Andrej Perlach, who became a rector of the University of Vienna and who taught diverse subjects such as mathematics and medicine, Jurij Vega, known for his logarithm tables and calculations of digits of π , Franc Močnik, one of the most prolific writers of high school textbooks in the Austrian Empire (and translated into 12 languages), Franc Hočevar, the first Slovenian mathematician who published papers in the modern sense, Josip Plemelj, known for instance for the Sokhotski–Plemelj theorem from complex analysis, Ivo Lah, known for Lah numbers in combinatorics, and Ivan Vidav of the Vidav–Palmer theorem from functional analysis.

Kingdom of Yugoslavia, from 1918 until 1945

In 1919, the University of Ljubljana was founded and Plemelj became its first rector. He focused on producing a high quality curriculum, essentially covering algebra and number theory, differential equations and analytic functions. Unfortunately, he only published the corresponding three textbooks at the end of his career after World War II. Nearly all students of mathematics at that time became high school teachers of mathematics, with two exceptions. His first PhD student, Anton Vakselj (PhD in 1924), became a professor of mathematics at the Technical Faculty of the University of Ljubljana while his second PhD student Ivan Vidav (PhD in 1941) became his successor.

Socialist Federal Yugoslavia, from 1945 until 1991

In 1949, the Society of Mathematicians, Physicists and Astronomers of Slovenia was founded. At that time, less than 10 Slovenian mathematicians were involved in research in mathematics, with Plemelj and Vidav being the leading mathematicians focusing on various aspects of mathematical analysis. Although Plemelj only retired in 1957, it was Vidav who created the mathematical school in Slovenia. Between 1955 and 1985, he had 17 PhD students and currently has 105 academic descendants.¹ However, in the 1970s, a number of important things happened.

In 1960, the Institute of Mathematics, Physics and Mechanics was founded in Ljubljana. In the following years, most active mathematicians in Slovenia became partially employed there in order to conduct research in mathematics. This model of separating teaching at the university from research at the institute was not uncommon in Eastern Europe.

In 1972, the first graduate programme in mathematics started at the University of Ljubljana.

In 1973, the University of Maribor (the second university in Slovenia) was established.

Since 1972, over 20 Slovenian research mathematicians got their PhDs abroad or had foreign advisors and returned to Slovenia to pursue their academic careers at home, bringing new research areas and reducing the risk of inbreeding in a small community. As shown in Table 1, seven of them have at least 10 academic descendants.

(a)	(b)	(c)	(d)	(e)	(f)	(g)
Ivan Vidav	1941	34	Josip Plemelj	Austria	17	105
Jože Vrabec	1972	57	James Cannon	USA	2	11
Boštjan Vilfan	1972	68	Albert deSilva Meyer	USA	4	10
Dragan Marušič	1981	05	C. St.J.A. Nash-Williams	UK	7	14
Tomaž Pisanski	1981	05	Torrence Parsons	USA	16	78
Franc Forstnerič	1985	32	Edgar Lee Stout	USA	9	14
Franc Solina	1987	68	Ruzena Bajcsy	USA	13	20

Table 1. Mathematicians having international education with at least 10 academic descendants in Slovenia. The data are collected mostly from the Mathematics Genealogy Project:

- (a) Mathematician,
- (b) Year when PhD was received,
- (c) Math Subj Classification of the thesis,
- (d) Advisor,
- (e) Country,
- (f) Number of doctoral students,
- (g) Number of academic descendants.

These figures indicate that discrete mathematics in Slovenia, in particular combinatorics and graph theory, started in the last quarter of the 20th century.

Independent Slovenia after 1991

In an independent and democratic Slovenia, mathematics witnessed further development. Ease of travel has increased the number of mathematicians who study abroad. At the same time, the number of students from abroad is steadily increasing. Several accomplished mathematicians have also decided to continue their academic careers in Slovenia.

In 2003, the third public university, the University of Primorska, was established, followed by FAMNIT (the faculty where mathematics is taught) in 2006. Currently, all three public universities in Slovenia offer PhD programmes in mathematics.

In 2006, Slovenia very successfully hosted the 47th International Mathematical Olympiad (IMO), with participation of competitors and their team leaders totaling over 2000. It has a very efficient computer system for running mathematical competitions and it hosts the IMO homepage. The IMO's current secretary Gregor Dolinar also comes from Slovenia. Currently, high school competitions form a dominant activity of the Society of Mathematicians, Physicists and Astronomers of Slovenia.

In 2008, the first high-quality mathematical journal *Ars Mathematica Contemporanea* was established in Slovenia. It mainly covers discrete mathematics.

According to the Mathematics Genealogy Project, a little over 300 PhDs in mathematical sciences were

¹ Mathematics Genealogy Project.

awarded by Slovenian universities, almost one half in the area of discrete and applied mathematics or theoretical computer science.

All three universities grant honorary PhDs. They all recognise the importance of mathematics. At the University of Ljubljana, the following mathematicians have been granted this honour: Josip Plemelj (1963), Alojz Vadnal (1981) and Ivan Vidav (1997) from Slovenia, and Ruzena Bajcsy and Dana Scott (2003) from the US. In 2018, Cheryl Praeger (Australia) received an honorary doctorate from the University of Primorska and, in the same year, Wilfried Imrich (Austria) received an honorary doctorate from the University of Maribor. They both work mainly in discrete mathematics.

Slovenia has attracted accomplished mathematicians to spend sabbaticals at its universities and several international mathematicians have decided to pursue their academic careers in Slovenia: one at the University of Maribor, three at the University of Ljubljana and three at the University of Primorska.

One of the biggest achievements of mathematics in Slovenia is winning the bid for the 8th European Congress of Mathematics, to take place in Portorož, Slovenia, in July 2020.

A New Learned Society

The *Slovenian Discrete and Applied Mathematics Society* (SDAMS) was founded in Koper (Slovenia) on 14 December 2016.

The aim of this society is to promote the mathematical sciences, with a special emphasis on discrete and applied mathematics. The society is research-oriented and publishes scientific literature and organises scientific meetings. In particular, the SDAMS is involved in publishing two international mathematical journals: *ArS Mathematica Contemporanea* (<https://amc-journal.eu/>) and *The Art of Discrete and Applied Mathematics* (<https://adam-journal.eu/>).

The SDAMS is also involved in organising valuable scientific meetings. So far, it has co-organised five such meetings. The next one will be the “Discrete Biomathematics Afternoon on the Adriatic Coast”, 13–14 February 2019, Koper, Slovenia (<https://conferences.famnit.upr.si/event/9/>).



Historical centre of the coastal city of Koper in Slovenia.



In 2018, SDAMS became one of the co-publishers of AMC, founded in 2008, and the main publisher of ADAM, an electronic journal that was founded in 2018 (both journals are high-quality, peer-reviewed, of no charge for authors and are freely available to readers).

The SDAMS has members, fellows and honorary members. Currently it has about 50 members, mostly from Slovenia but also from Bosnia, Canada, Colombia, Hungary, Italy, Mexico, New Zealand and the USA.

A ‘member’ may be any individual actively engaged in mathematical research, as evidenced in practice by authorship of a paper covered by *MathSciNet* or *zbMATH* (formerly *Zentralblatt MATH* or by enrolment on a research degree (supported by a recommendation letter from the student’s supervisor). A ‘fellow’ is a member who has strong international visibility and has made a positive impact on mathematics in Slovenia. An ‘honorary member’ is an individual who has made outstanding contributions to the development of discrete or applied mathematics in Slovenia.

The SDAMS has a council to oversee its operations. It has a nomination committee for nominating candidates for fellowship and for considering candidates for honorary membership. Under the current rules, the council of the society will elect new fellows and a limited number of honorary members at its annual meeting each year.

The SDAMS seeks contact with other similar domestic and international societies worldwide. In 2018, it was admitted as a full member of the European Mathematical Society. It welcomes international members, in particular mathematicians interested in discrete and applied mathematics. The current annual membership fee is 20 euros. For more information, see <http://sdams.si/en>.



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Tomaž Pisanski (Tomaz.Pisanski(at)upr.si) is the President of the SDAMS and a professor of mathematics and computer science at the University of Primorska. He is the chair of the organising committee of 8ECM. His research interests include various aspects of discrete mathematics. He is the co-author of a book on configurations.