



Math4NL news – March 2025

It has been a while since there was any contact from Math4NL. The reason is that a structural change took place in autumn 2024. The PWN board has decided to have Math4NL run by a director from now on. There is a possible candidate, but he can only take up the work for Math4NL later in 2025. In the meantime, PWN's director Wil Schilders will fill this position ad interim. We hope you are still willing to actively contribute to the success of Math4NL. Thank you very much in advance! From now on, you will be contacted on a regular basis from Math4NL, with news about activities and opportunities. We will also soon plan an online meeting with all ambassadors. Please read this newsletter carefully. It starts with some important issues due to the change in structure for Math4NL. After that, some important developments are being discussed for which we ask your attention and potential action. If you have any suggestions, for example concerning events that aim at bridging mathematics and society, please don't hesitate to contact us at info@math4nl.nl.

New structure of Math4NL

As indicated above, the interim director is Wil Schilders, he is assisted by Michelle Jacobs at the Math4NL office. The email address info@math4nl.nl can be used to contact Math4NL. The webpage <https://www.math4nl.nl> has been updated with the new information. PWN's Innovation Committee will be closely involved in Math4NL activities.

Math4NL flyer

A flyer has been designed that can be used to advertise Math4NL and its activities. It can be downloaded on the website. Math4NL will be present at the Dutch Mathematical Congress (NMC) on April 22-23 (<https://mathematischcongres.nl/>).

New business plan

In close consultation with the PWN board and the Innovation Committee, a new business plan was made in December 2024, which sets out the main activities for the year 2025. The plan is available on request.

Financial support of Math4NL

The new business plan has been embraced by 4TU.AMI and NWO Science, and they are providing financial support for Math4NL's activities through 2025. In addition, part of the contribution from mathematics institutes will also be used to support Math4NL. We are extremely grateful for this generous support.

Math4NL intends to work much more closely with the Strategic Research Initiatives (SRI) of 4TU.AMI (see <https://www.4tu.nl/ami/Research/current-projects/>), such as the SRI on *Model Reduction for Industrial Applications* and the SRI on *Bridging Numerical Analysis and Machine Learning*.

Opportunities for mathematicians within the NWA-ORC call

The Nationale Wetenschapsagenda (NWA) is the Dutch National Science Agenda. It aims to strengthen the connection between science and society by encouraging researchers to tackle pressing societal challenges in collaboration with citizens, industry, and public organizations. The NWA promotes interdisciplinary and intersectoral research that contributes to societal impact. The agenda is structured around 25 thematic routes, each representing a key area of societal and scientific importance.

The NWA-ORC call ("Onderzoek op Routes door Consortia") is one of the main funding instruments of the NWA. Its goal is to support large, interdisciplinary research consortia working along these 25 routes. The focus is on collaboration, co-creation, and societal impact, encouraging projects that span disciplines and sectors to address complex societal issues. The research encourages cooperation both within the entire public knowledge chain and between the entire knowledge chain and societal partners.

Active collaboration within the knowledge chain is key to achieving breakthroughs. Consortia of researchers and social partners from the public and semi-public sectors and business therefore cooperate intensively in shaping, conducting and applying research. Within these consortia, the cyclical nature of research and innovation processes can come into its own. Research leads to knowledge that flows through to application in policy and practice. And questions and problems from policy and practice in turn give rise to further fundamental and applied research.

The Research Committee of PWN is discussing opportunities for mathematicians in certain routes. The Innovation Committee has also identified potential options for mathematicians to participate: with some imagination, you can find some mathematical brackets under the Knowledge Gaps section in each of the following topics:

- Systems theory in *The first 1000 days*
- Topology, algebra in *Symmetry*
- Logistics in *Climate-neutral accessibility*
- Statistics/stochastics in *Quantum technology*
- Graph theory, statistics and game theory in *From gaps to bridges*
- Extreme values in *Water system transition*
- Statistics in *Don't sit still*

If you are interested, go to the specific theme via the main page

<https://www.nwo.nl/en/researchprogrammes/dutch-research-agenda-nwa/research-along-routes-by-consortia-nwa-orc/nwa-orc-2025/themes>

Here you can then click on a topic of interest, and subsequently click the button "Knowledge gaps". The process is not easy, often there are many groups interested. Discussion sessions then lead to consortia that can write a proposal. Examples of granted projects can be found here: <https://www.nwo.nl/nieuws/negen-consortia-ontvangen-financiering-binnen-de-nwa-orc-ronde-2023>. One project where mathematicians were very active in the application process is "Emergence at all scales".

NWA is a great place to perform applied mathematical research and therefore relevant for the Innovation and Research Committees of PWN< as well as for Math4NL. If you have any ideas and would like to receive help, please contact us and we may be able to find additional partners.

Looking for industry speakers in area of geometry or algebra

TU/e is organizing a workshop, May 26-27, on the topic of "real-world applications of geometry and algebra." The idea is to have a dialog between people from industry that face problems related to geometry and/or algebra, and people from academia who are interested in applying their skills to real-world problems. The website of the workshop is

<https://sites.google.com/view/appliedgeometryalgebra/home/raga-2025>

Examples of problems of interest are those that relate to localization and mapping (e.g. GPS, robot navigation, building the map of an environment using sound,...), and those that relate to object detection and recognition (e.g., HAZMAT sign location and interpretation, gang graffiti interpretation, finding defects in manufactured objects, ...).

This is the second time the workshop is organised and we already have some industry people lined up. However, we would like to open up our network and see if other companies or industries might be interested. Algebra/geometry is not one of those "typical" applied math disciplines, so we think this can lead to novel ideas and solution methods that industry was not aware of. For example, we heard that there might be a lot of geometric issues in the shipping industry (e.g. tracking and moving containers), so we were hoping to connect with companies that work within big ports (e.g. Rotterdam).

Would you be interested in helping us get the word out about our workshop and get some more speakers from industry? Please write to Mireille Boutin at m.boutin@tue.nl

Studygroups Mathematics with Industry (SWI)

A successful SWI was held from January 27-31, 2025, at Utrecht University. Six challenges were presented and subsequently worked on by mathematicians, the outcomes presented on the final day. For more information, see <https://www.swi-wiskunde.nl/swi2025/>

The next SWI will take place at Leiden University, dates will be announced later this year.

Afternoon on "Advancing Scientific Machine Learning in Industry"

The foundation Computational Science NL (<https://www.computationalsciencenl.nl/>) is organising an event on Advancing Scientific Machine Learning in Industry on June 17 in the Crowne Plaza hotel in Utrecht. The objective is to bridge the gap between cutting-edge research in scientific machine learning (SciML) and its real-world application in industry and applied research. It brings together researchers, engineers, and innovators to explore how modern machine learning can be integrated with traditional scientific modelling to create reliable, scalable, and interpretable tools. The focus is on practical challenges such as uncertainty quantification, data assimilation, and operator learning, with the aim of shaping a future where SciML delivers meaningful impact beyond academia. Confirmed speakers are Max Welling (CuspAI and UvA, Amsterdam Machine Learning Lab), Stefan Kurz (Bosch and ETH Zürich), Koen Strien (Ignition Computing), Maxim Pisarenko (ASML) and Jan Willem van de Meent (UvA, Amsterdam Machine Learning Lab). Registration will soon open, please visit the website of Computational Science NL for updates. This workshop is ideal for networking with industry!

The Role of Scientific Machine Learning in Industry

Probably too late for you to attend, nevertheless interesting to mention this afternoon workshop organised by the 4TU.AMI SRI on Bridging Numerical Analysis and Machine Learning:

On 31 March 2025, the workshop The Role of Scientific Machine Learning in Industry will be held from 13:00 to 18:00 at the Aula Conference Centre in Delft. The event explores how

Scientific Machine Learning is reshaping industrial applications by combining machine learning with scientific computing.

Speakers include Timo Deist (ASML), Stefan Gavranovic (Siemens), Uwe Iben (Robert Bosch GmbH), and Jonathan Nuttall (Deltares), who will share insights on recent advances, challenges, and the impact of SciML across various sectors.

Mathematics for Top Sectors

The Topsectoren (Top Sectors) are a Dutch innovation policy initiative launched by the government to strengthen the country's knowledge economy and global competitiveness. The aim is to bring together businesses, research institutions, and government—often referred to as the "triple helix"—to collaborate on innovation and applied research in areas of economic and societal importance.

The current Top Sectors are: Agri & Food, Chemicals, Creative Industry, Energy, High Tech Systems and Materials (HTSM), Life Sciences & Health (LSH), Logistics, Water & Maritime, Horticulture & Starting Materials, and ICT (which functions as a cross-sector theme).

The goals of the Top Sectors policy are to stimulate innovation in sectors where the Netherlands holds a strong global position, encourage collaboration between companies, universities, and government to tackle societal challenges, and boost economic growth and job creation through knowledge-driven development. Additionally, the policy aims to support sustainability and digitalization by aligning research with long-term transitions—such as the energy transition, the circular economy, and health innovation—and to enhance international competitiveness by promoting exports and attracting investment.

The Innovation Committee of PWN has held brainstorming sessions with representatives of the Top Sectors Agri & Food and Energy, and has produced some very useful information on potential opportunities for mathematicians. For more information, see the website of Math4NL.

Hackathon June 14: working a full day on a practical challenge

Mark your calendars for June 14, 2025, as Computational Science NL hosts its first Hackathon in Utrecht! This event invites researchers from all domains and sectors in computational science to collaborate on solving a real-world challenge presented by Deltares. Participants will engage in hands-on coding and teamwork to develop innovative solutions to the problem posed. It's a unique opportunity to exchange knowledge, foster innovation, and strengthen connections within the Dutch computational science community.

More details, including the final programme and registration, will be shared in early 2025 on the website <https://www.computationalscience.nl>.

