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CURRICULUM VITAE

MARKUSS G. KENINS

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Education: bachelor. Mathematics.

- Institution: University of Groningen — Groningen, the Netherlands
- Date: (*expected*) July 2026 — Start date: Sep. 2023
- Diploma: (*expected*) Summa cum laude [[avg. **9.4**, rank #**1** (*current*)]]
  (*req.*: *average and thesis grades excellent – at least 9 out of 10*)
- Main courses:

• Geometry	grade 10	• Dynamical systems	grade 9.5
• Multivariable analysis	grade 10	• Group theory	grade 9.5
• Partial differential equations	grade 10	• Analysis on manifolds	[pending]

- Specialisation: Double Bachelor's degree with particle physics

Education: bachelor. Physics.

- Institution: University of Groningen — Groningen, the Netherlands
- Date: (*expected*) July 2026 — Start date: Sep. 2022
- Diploma: (*expected*) Summa cum laude [[avg. **9.3**, rank #**8** (*current*)]]
  (*req.*: *average and thesis grades excellent – at least 9 out of 10*)
- Main courses:

• Advanced mechanics	grade 10	• Mechanics and relativity	grade 9.5
• Symmetry in physics	grade 9	• Relativistic quantum mechanics	[pending]
• Structure of matter	grade 9	• Advanced electrodynamics	[pending]

- Specialisation: Double Bachelor's degree with pure mathematics

Education: ⊕ Honours College (bachelor excellence programme).

- Institution: University of Groningen — Groningen, the Netherlands
- Date: June 2025 — Start date: Jan. 2023
- Diploma: [[avg. **8.8**]] [[project grade **9**]]
- Supervisor: Prof. Dr. Thomas La Cour Jansen — E-mail: `t.l.c.jansen@rug.nl`
  Phone: +31 6 3192 1919 — Staff page: `https://www.rug.nl/staff/t.l.c.jansen/`
- Project: 'Computational 2D infrared spectroscopy to observe ring puckering in sugar molecules in solvent' • Collaborators (exp.): Prof. Dr. Henrike Müller-Werkmeister & group

Education: high school.

- Institution: Riga State Gymnasium No. 1 — Riga, Latvia
- Date: July 2022 — Start date: Sep. 2019
- Diploma: Red cover & Golden stipend [[avg. **8.9**]]
  (*req.* (red cover): *significant achievements in Olympiads and competitions*)
  (*req.* (golden st.): *top 20 students in the city of Riga*)
- Main courses: Mathematics (grade 10), Calculus (10), Physics (10), Chemistry (10), Biology (10)
- Specialisation: Mathematics and Natural sciences — School specialised in Mathematics
- School ranking: Best school in Latvia
  2025 ranking: #**1** Link: `https://www.skolureitings.lv/?page_id=1418`, `https://www.skolureitings.lv/?p=1385`

Employment and awards.

Employment.

Sep. 2024–now: **Teaching Assistant**,
University of Groningen, cluster mathematics & cluster physics. [taught 14 courses]
Nov. 2023–now: **Research Intern** (unpaid),
Theory of Condensed Matter, Jansen Group, University of Groningen
Supervisor: Prof. Dr. Thomas L.C. Jansen ∘ Contact: `t.l.c.jansen@rug.nl`
Jan. 2023–Oct. 2023: **Research Intern** (unpaid),
Computational Enzyme Engineering, Fürst Group, University of Groningen
Supervisor: Dr. Maximilian J.L.J. Fürst ∘ Contact: `m.j.l.j.furst@rug.nl`
Aug. 2020–May. 2022: **Research Intern** (unpaid),
Yeast Physiology and Biotechnology, Liepiņš Group, University of Latvia
Supervisor: Prof. Dr. Jānis Liepiņš ∘ Contact: `janis.liepins@lu.lv`

Awards & prizes.

2022 • **Riga City Council Golden Fund Stipend**, Riga, Latvia ∘ Amount: € 1200
Awarded to the top 20 students graduating in Riga.
• **Latvian Cabinet of Ministers Prize**, Riga, Latvia. (Nr. 864, 2022) ∘ Amount: € 995
2021 • **Latvian Cabinet of Ministers Prize**, Riga, Latvia. (Nr. 938, 2021) ∘ Amount: € 995

Teaching profile.

Teaching qualifications.

2024 • 'Teaching assistant training', University of Groningen, Faculty of Science and Engineering.
Topics: *Didactics, feedback, group dynamics, cultural diversity, grading.* ∘ Date: Oct. 2024

Lectures read. [3]

2025 • 'Einstein's special relativity' (24 Oct.; 1h 45 min) ∘ Course: Mechanics and Relativity
Transcript: `mgk.ac/teach/rtr.pdf` ∘ Prepared problems: `mgk.ac/teach/rpr.pdf` ◇ A. **200**
• 'Recapitulation of linear algebra' (13 June; 1 h 15 min) ∘ Linear Algebra ◇ A. **60**
• 'Magnetostatics' (4 Apr.; 1 h 15 min) ∘ Course: Electricity and Magnetism
Transcript: `mgk.ac/teach/mtr.pdf` ◇ Audience **120**

Lecture notes written. [[As teaching staff.]]

2025 • 'Multivariable Analysis' ∘ Course: Multivariable Analysis ∘ Link: `mgk.ac/teach/mva.pdf`
• 'Electrostatics' ∘ Course: Electricity and Magnetism ∘ Link: `mgk.ac/teach/enm.pdf`
2024 • 'Special Relativity' ∘ Course: Mechanics and Relativity ∘ Link: `mgk.ac/teach/mnr.pdf`

Courses taught as teaching assistant: [14] University of Groningen.[1]

General duties: [2 h session]: 20–30 min recapitulation of the previous lecture, 1–2 h assistance with solving exercises; exam and homework assignment grading; hearing appeals at exam review sessions.
Load: contact 4 h/week, preparation & grading 2–5 h/week; for students 5 ECTS per term ('a'/'b').

	Sem.	Prg.	[[∗: re-hired, ∗∗: re-h. other[1]]]	Lecturer(-s)
2026 •	II	P	Electricity and Magnetism*	Prof. Maxim S. Pchenitchnikov, Dr. Jelle Aalbers
2025 •	I-b	Ma	Multivariable Analysis	Dr. Hildeberto Jardon Kojakhmetov
•	I-b	Ma	Complex Analysis**	Prof. Oliver Lorscheid, Dr. Cagri Karakurt
•	I-b	P	Advanced Mechanics	Dr. Emanuela Dimastrogiovanni
•	I-b	P†	Electricity and Magnetism**	Dr. Myroslav Kavatsyuk
•	I-a	Ma	Metric & Topological Spaces	Dr. Arthemy V. Kiselev
•	I-a	Ma†	Calculus 2	Dr. Cagri Karakurt
•	I-a	P	Mechanics and Relativity*	Prof. Diederik Roest, Dr. Daan Meerburg
•	II	P	Electricity and Magnetism	Prof. Maxim S. Pchenitchnikov, Dr. Jelle Aalbers
•	II-b	Ma†	Linear Algebra	Dr. Ekin Özman
•	II-b	P	Physics Lab: Research Project	Dr. Jelle Blijleven
•	II-a	P	Fundamentals of Electronics	Prof. Elisabetta Chicca
2024 •	I	P	Mechanics and Relativity	Prof. Diederik Roest, Dr. Daan Meerburg
•	I-a	P	Computational Methods 2	Dr. Myroslav Kavatsyuk

[1] "∗": Re-hired for the same course again. "∗∗": Hired for the course by a professor with whom I taught a different course before. "†": the course is taught under the Mathematics (Ma) or Physics (P) cluster to students of other programmes.

Research profile.

Research publications. [2] [Teaching publications given in § Lecture notes.]

[1] *T. Stensitzki*,* *P. Gasse*,* *M.G. Ķēniņš*,* *Y. Mai-Linde*, *T. Linker*, *T.L.C. Jansen*, and *H. M. Müller-Werkmeister* (2025) Direct observation of Ring-puckering of thiocyanate labeled bn-α-arabinopyranose with 2D-IR specroscopy and computational methods. *Preprint*, *in preparation*; see `mgk.ac/res/` for updates.
* Co-first author.

[2] *K. E. van Adrichem*, *T. Zuidema*, *S. Migoni*, *G. A. H. ten Hoven*, *K. Zhong*, *M. K. Espinoza Cangahuala*, *M. G. Ķēniņš*, *A. V. Cunha* and *T. L. C. Jansen* (2025) A general purpose Hamiltonian mapping program for computational spectroscopy. *Preprint*, *in preparation*; see `mgk.ac/res/` for updates.

Research projects. [5] [Only last 2 projects described below.]

Nov. 2023–now:	**Computational 2D infrared spectroscopy of sugar molecules**
○ Supervsior:	Prof. Dr. Thomas L. C. Jansen
○ Collaborators:	Prof. Dr. Henrike Müller-Werkmeister, Dr. Till Stensitzki & co. (U. of Potsdam)
○ Talks:	Honours Closing Symposium, 2024 & again 2025, UG, Group meeting, 2025, UG.
○ Publications:	[1] main, *preprint* pending; [2] ancillary, *preprint* pending.
Apr.–Jun. 2024:	**Heat transfer simulations using discrete random processes**
○ Talks:	Physics, Astronomy, and Mathematics Symposium, 2024, UG. Poster & **plenary**.
○ Awards:	Best first-year research project in physics.
○ Links:	Report `mgk.ac/res/htrep.pdf`, poster `mgk.ac/res/htpost.pdf`, presentation `mgk.ac/res/htpres.pdf`.

Invited plenary talks at symposia & colloquia. [1]

2024 • **Physics, Astronomy, and Mathematics Symposium**, UG, Groningen, the Netherlands
Title: Heat transfer simulations using discrete random processes
Collaborators: Stanislavs Dubrovskis, Eduard Mrug, Toms Ozoliņš ◇ *Attendees* **600**
Note: The plenary talk was given as the winning first-year research project in physics

Talks at conferences, symposia, and research group meetings. [9]

2026 • **Theory of Condensed Matter Jansen group**, Zernike Institute for Advanced Materials, University of Groningen (UG), Groningen, the Netherlands ◇ *Attendees* **20**
2025 • **Honours Closing Symposium**, UG, Groningen, the Netherlands ◇ *Attds.* **100**
• **at lecture: 'Physics Lab: Research Project'** , UG, Groningen, the Netherlands
Collaborators: S. Dubrovskis, E. Mrug, T. Ozoliņš ◇ *Attds.* **100**
2024 • **Physics, Astronomy, and Mathematics Symposium**, UG, Groningen, the Netherlands
Collaborators: S. Dubrovskis, E. Mrug, T. Ozoliņš ◇ *Attds.* **600**
• **Honours Closing Symposium**, UG, Groningen, the Netherlands ◇ *Attds.* **200**
2023 • **Computational Biotechnology Fürst group**, Groningen Biomolecular Sciences and Biotechnology Institute, UG, Groningen, the Netherlands ◇ *Attds.* **30**
2022 • **Regeneron International Science and Engineering Fair (ISEF)**, Atlanta, Georgia, United States of America ◇ *Attds.* **1700**
• **Latvian Conference of Student Research**, University of Latvia, Riga, Latvia ◇ *A.* **100**
• **IBO IGP Conference**, Yerevan State University, Yerevan, Armenia ◇ *Attds.* **200**

Audited / extracurricular courses. [4]

2026 • **Advanced Logic**, Prof. Dr. L.C. Verbrugge ○ Semester: II-a[2] ○ Load: 5 ECTS
2025 • **Geometry and Topology**,[3] Dr. Arthemy V. Kiselev, ○ Semester: I-b
Programme: `https://ocasys.rug.nl/current/catalog/course/WMMA018-05`
• **Deformations of Poisson brackets: Kontsevich graph calculus**,[4] Dr. Arthemy Kiselev, Link: `https://www.mathnet.ru/rus/conf1591` ○ My notes: `mgk.ac/res/kgc.pdf`
• **Introduction to Logic**, Prof. Dr. Davide Grossi ○ Semester: I-b ○ Load: 5 ECTS

[2]The academic year consists of two semesters (I – autumn & II – spring), each divided in half into terms 'a' and 'b'.
[3]This is a master's course. By law a master's course cannot appear on a bachelor diploma. I followed the lectures, but cannot obtain credits.
[4]Recorded (May 2019) at the Independent University of Moscow. I followed the recorded lectures. No credits.

Olympiads & competitions. [42]

Olympiads: master- & bachelor-level.

2026 • [[*pending*]] **PLANCKS** (May, 2026) – International physics Olympiad for master *and* bachelor teams (shared leaderboard). ◦ Webpage: `https://iaps.info/events/plancks/`

2025 • [[**1st place** bachelor; 2nd overall]] **PION** – Netherlands physics Olympiad for master *and* bachelor teams; PLANCKS selection stage (top 2 teams qualify for PLANCKS).

2024 • [[**2nd place** bachelor]] **PION**

2023 • [[participated]] **PION**

Olympiads & competitions: bachelor-level.

2024 • [[**silver**]] **University Physics Competition** – International physics competition for bachelor teams: 48 hours, 1 open problem. ◦ Webpage: `https://uphysicsc.com/`

• [[rank 35/233; best Dutch team]] **Physics Brawl Online** – International physics competition for university & high school teams. ◦ Webpage: `https://physicsbrawl.org/`

Olympiads & competitions: international high-school-level.

2022 • [[**bronze**]] 33rd **International Biology Olympiad**

• [[upper bracket statistics]] **ISEF** – Regeneron International Science and Engineering Fair

• [[**silver**]] **IGP of IBO** – International Group Project (research proposal); in 33rd IBO

2021 • [[**bronze**]] 32nd **International Biology Olympiad**

Olympiads & competitions: national high-school-level. [16 + 16 omitted]

2022 •	[[**silver**]]	46th	Latvian Conference of Student Research	qualified for	ISEF
•	[[**gold**]]	46th	Riga Conference of Student Research		
•	[[**gold**]]	3rd	Latvian Teams Physics Olympiad		
•	[[**merit**]]	47th	Latvian Open Physics Olympiad		
•	[[**merit**]]	72nd	Riga State Physics Olympiad		
•	[[**silver**]]	44th	Latvian State Biology Olympiad	qualified for	IBO
•	[[**gold**]]	44th	Riga State Biology Olympiad		
•	[[**bronze**]]	63rd	Latvian State Chemistry Olympiad		
•	[[**gold**]]	63rd	Riga State Chemistry Olympiad		
2021 •	[[**silver**]]	43rd	Latvian State Biology Olympiad	qualified for	IBO
•	[[**gold**]]	43rd	Riga State Biology Olympiad		
•	[[**merit**]]	62nd	Riga State Chemistry Olympiad		
2020 •	[[**bronze**]]	42nd	Latvian State Biology Olympiad		
•	[[**bronze**]]	42nd	Riga State Biology Olympiad		
•	[[**silver**]]	61st	Riga State Chemistry Olympiad		
2019 •	[[**bronze**]]	46th	Latvian Open Mathematics Olympiad		

Writing Olympiad problems. [17]

Sep. 2022–now: **Latvian State Biology Olympiad** [12] [[1–2 problems per stage every year]]

Sep. 2022–now: **Latvian Teams Biology Olympiad** [5] [[one of the main organisers]]

Personal profile.

Languages. Latvian (native), English (C2, fluent; proof by IELTS '22), German (basic).

Programming & symbolic languages.

- Python [[Proficient]] For writing algorithms, data analysis, simulations, plotting, executing scripts on Unix, computations.
  ◦ Main packages: `NumPy`, `SciPy`, `Pandas`, `Matplotlib`, `os.system`, `MDAnalysis`.
- Haskell [[Competent]] General functional programming workflow.
- Unix shell [[Competent]] Use of `bash` (`.sh`) for writing and executing scripts on the Unix shell: loops, re-naming files, executing workflow, ssh, use on a cluster.
- Magma [[Basic]] Used in coding (error-correcting codes) theory.
- Mathematica [[Basic]] For basic computations and plotting.

High-performance computing. (SLURM) 3 years of experience: highly skilled & proficient.

LaTeX skills. Extremely proficient.

Hobbies. Piano playing (Chopin, Bach), bridge (4 silver medals), road cycling.

Study associations. Physics & mathematics association 'FMF', University of Groningen.