

The Master's Program in Mathematics

John Rognes

Department of Mathematics, University of Oslo

August 2022

Program structure

Program options

- ▶ Mathematics (MAT)
- ▶ Mathematics for applications (MFA)

Constituents

- ▶ Long or short master's thesis
(60 or 30 credits)
- ▶ Courses (60 or 90 credits)

Master's agreement

- ▶ Supervisor
- ▶ Course plan
- ▶ Thesis problem
- ▶ **Deadline: December 1st 2022**

Common course in topology



- ▶ Fall 2022:
MAT4500 - Topology
- ▶ Recommended prior
knowledge: MAT2400 - Real
analysis
- ▶ Exemption if you have
MAT3500 - Topology in your
bachelor's degree

Program option Mathematics (MAT)

Common

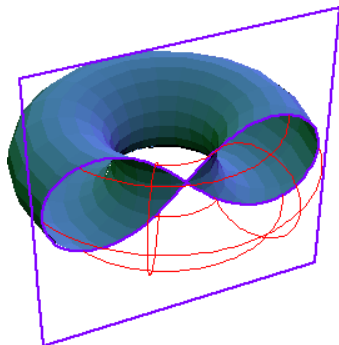
- ▶ MAT4500 - Topology

Specializations

- ▶ MAT42xx - Algebra/algebraic geometry
- ▶ MAT44xx - Operator algebras
- ▶ MAT45xx - Geometry/topology
- ▶ MAT48xx - Several complex variables

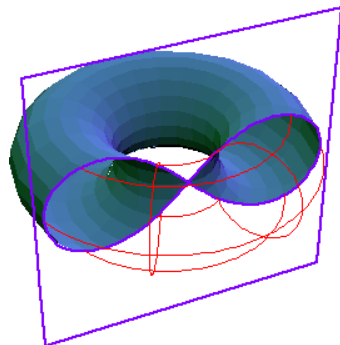
Algebra/algebraic geometry

- ▶ Fall 2022:
MAT4200 - Commutative algebra
- ▶ Recommended prior knowledge:
MAT2200 - Groups, rings and fields
- ▶ Spring 2023:
MAT4210 - Algebraic geometry I
MAT4215 - Algebraic geometry II



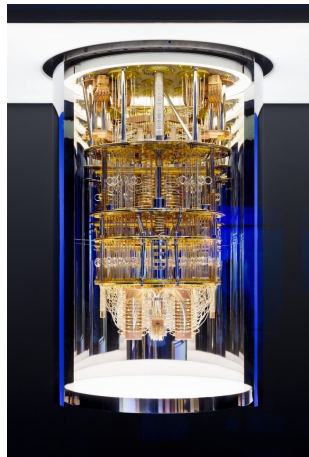
Algebra/algebraic geometry

- ▶ Fall 2022:
MAT4200 - Commutative algebra
- ▶ Recommended prior knowledge:
MAT2200 - Groups, rings and fields
- ▶ Spring 2023:
MAT4210 - Algebraic geometry I
MAT4215 - Algebraic geometry II
- ▶ Other courses:
MAT4230 - Algebraic geometry III
MAT4240 - Elliptic curves
MAT4250 - Number theory
MAT4270 - Representation theory



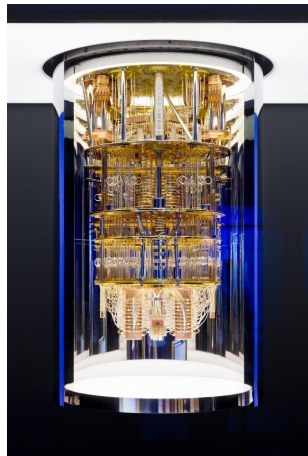
Operator algebras

- ▶ Fall 2022: MAT4410 - Advanced linear analysis
- ▶ Recommended prior knowledge: MAT3400 - Linear analysis with applications
- ▶ Spring 2023: MAT4450 - Advanced functional analysis



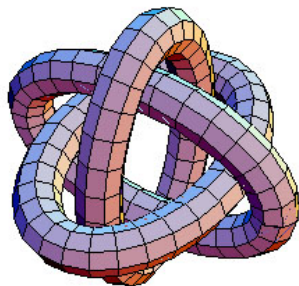
Operator algebras

- ▶ Fall 2022: MAT4410 - Advanced linear analysis
- ▶ Recommended prior knowledge: MAT3400 - Linear analysis with applications
- ▶ Spring 2023: MAT4450 - Advanced functional analysis
- ▶ Other courses:
 - MAT4430 - Quantum information theory
 - MAT4460 - C^* -algebras



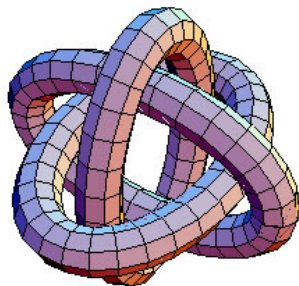
Geometry/topology

- ▶ Fall 2022:
MAT4510 - Geometric structures
- ▶ Spring 2023:
MAT4520 - Manifolds
MAT4530 - Algebraic topology I



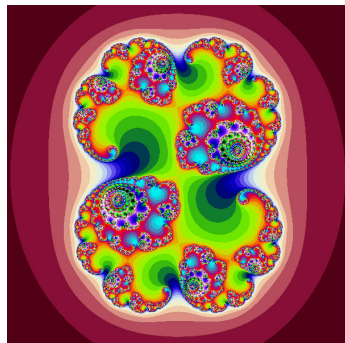
Geometry/topology

- ▶ Fall 2022:
MAT4510 - Geometric structures
- ▶ Spring 2023:
MAT4520 - Manifolds
MAT4530 - Algebraic topology I
- ▶ Other courses:
MAT4540 - Algebraic topology II
MAT4551 - Symplectic geometry
MAT4590 - Differential geometry
MAT4595 - Geometry and analysis



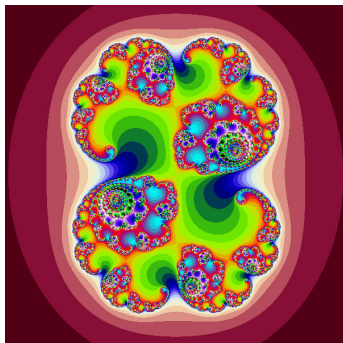
Several complex variables

- ▶ Fall 2022:
MAT4800 - Complex analysis
- ▶ Recommended prior knowledge:
MAT2400 - Real analysis
MAT2410 - Introduction to complex analysis
- ▶ Spring 2023:
MAT4810 - Introduction to several complex variables



Several complex variables

- ▶ Fall 2022:
MAT4800 - Complex analysis
- ▶ Recommended prior knowledge:
MAT2400 - Real analysis
MAT2410 - Introduction to complex analysis
- ▶ Spring 2023:
MAT4810 - Introduction to several complex variables
- ▶ Other courses:
MAT4820 - Complex dynamics
MAT4830 - Topics in complex analysis and dynamics



Program option Mathematics for applications (MFA)

Common

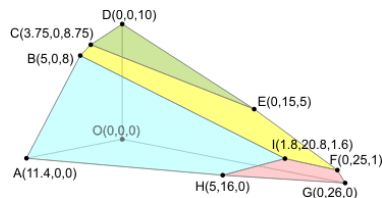
- ▶ MAT4500 - Topology

Specializations

- ▶ MAT41xx - Linear optimization and combinatorial matrix theory
- ▶ MAT43xx - Partial differential equations
- ▶ MAT47xx - Stochastic analysis

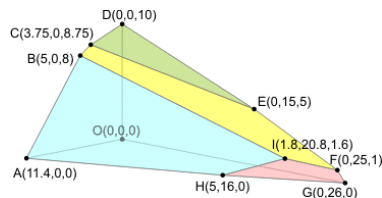
Linear optimization and combinatorial matrix theory

- ▶ Fall 2022:
MAT4110 - Introduction to numerical analysis
MAT4120 - Mathematical optimization
- ▶ Required prior knowledge:
MAT3100 - Linear optimization
- ▶ Spring 2023:
Special curriculum



Linear optimization and combinatorial matrix theory

- ▶ Fall 2022:
MAT4110 - Introduction to numerical analysis
MAT4120 - Mathematical optimization
- ▶ Required prior knowledge:
MAT3100 - Linear optimization
- ▶ Spring 2023:
Special curriculum
- ▶ Other courses:
MAT4130 - Numerical analysis
MAT4170 - Spline methods



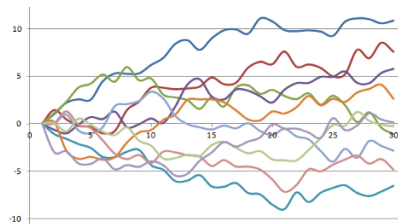
Partial differential equations

- ▶ Fall 2022:
MAT4301 - Partial differential equations
- ▶ Recommended prior knowledge:
MAT3360 - Introduction to partial differential equations
- ▶ Spring 2023:
MAT4305 - Partial differential equations and Sobolev spaces I



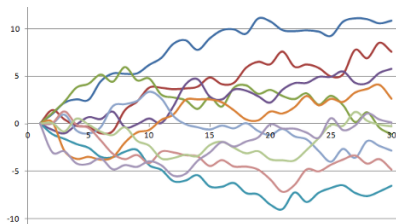
Stochastic analysis

- Fall 2022:
 - MAT4410 - Advanced linear analysis
 - MAT4720 - Stochastic analysis and stochastic differential equations



Stochastic analysis

- ▶ Fall 2022:
 - MAT4410 - Advanced linear analysis
 - MAT4720 - Stochastic analysis and stochastic differential equations
- ▶ Other courses:
 - MAT4740 - Malliavin calculus and applications to finance
 - MAT4750 - Mathematical finance: modelling and risk management
 - MAT4760 - Advanced mathematical methods in finance
 - MAT4770 - Stochastic modelling in energy and commodity markets
 - MAT4790 - Stochastic filtering



Other courses

'Lektorprogrammet'

- ▶ MAT4010 - School mathematics from an advanced point of view

Specialization in logic

- ▶ MAT4630 - Computability theory
- ▶ MAT4640 - Axiomatic set theory

Contact persons

Algebra/Algebraic geometry

- ▶ Arne B. Sletsjøe

Operator algebras

- ▶ Nadia Larsen

Geometry/topology

- ▶ John Rognes

Several complex variables

- ▶ Erlend F. Wold

Linear optimization and combinatorial matrix theory

- ▶ Geir Dahl

Partial differential equations

- ▶ Ulrik Skre Fjordholm

Stochastic analysis

- ▶ Salvador Ortiz-Latorre

Logic

- ▶ Lars Kristiansen

Further information

- ▶ www.uio.no/studier/program/matematikk-master/oppbygging/
- ▶ www.uio.no/studier/program/matematikk-master/spesialiseringer/
- ▶ www.mn.uio.no/math/personer/

Quiz

- ▶ Q: When is the deadline for the master's agreement?

Quiz

- ▶ Q: When is the deadline for the master's agreement?
- ▶ A: December 1st 2022