

MATH-657

Deformation Theory

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Cursus	Sem.	Type
Mathematics		Opt.

Language of teaching	English
Credits	3
Session	
Exam	Oral presentation
Workload	90h
Hours	66
Lecture	18
Exercises	13
Practical work	35
Number of positions	10

Frequency

Only this year

Remark

Registration only to edma@epfl.ch until 31.12.2023

Summary

We will study classical and modern deformation theory of schemes and coherent sheaves. Participants should have a solid background in scheme-theory, for example being familiar with the first 3 chapters of Hartshorne's 'Algebraic Geometry'.

Content

We will study classical and modern deformation theory of schemes and coherent sheaves. Participants will be assigned a topic, asked to deliver a talk (1 or 2 hour lecture depending on the number of participants) and prepare exercises during the week of February 5th.

Furthermore, the following topics will be addressed:

- Hilbert Schemes
- First order deformations
- Higher order deformations
- Formal moduli of plane curve singularities, coherent sheaves and schemes.
- Global moduli of curves and vector bundles

Keywords

Deformation theory

Learning Outcomes

By the end of the course, the student must be able to:

- Produce a talk
- Plan an exercise session
- Define the important concepts in the deformation theory of schemes and coherent sheaves.

Resources**Bibliography**

Deformation theory by Hartshorne

Ressources en bibliothèque

- [Deformation theory / Hartshorne](#)

Moodle Link

- <https://go.epfl.ch/MATH-657>