EPFL

MATH-326 | **Rational quadratic forms**

Cursus	Sem.	Type
Mathematics	BA5	Opt.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
Hours	**4 weekly**
Courses	2 weekly
Exercises	2 weekly
Number of positions	

Remark

pas donné en 2021-22

Summary

Given a quadratic equation, e.g. $x^2 + 2*y^2 = 81$, how can we decide whether there is a rational solution (x,y)? This basic question is what the theory of Rational Quadratic Forms is all about. The course gives an introduction and highlights fundamental techniques and results.

Content

- Quadratic Forms over a Field
- p-Adic Numbers
- Quadratic Forms over Local Fields
- Tools from the Geometry of Numbers
- Quadratic Forms over the Rationals
- Quadratic Forms over the Integers

Keywords

quadratic forms, p-adic numbers, geometry of numbers, primes in arithmetic progressions

Learning Prerequisites

Required courses

Linear Algebra I + II
Analysis I + II

Recommended courses

Rings and Fields

Teaching methods

ex-cathedra lectures + discussion based exercise sessions

Assessment methods

Bonus system (up to 10% of final exam)
Exam (written)

Dans le cas de l'art. 3 al. 5 du Règlement de section, l'enseignant décide de la forme de l'examen qu'il communique aux étudiants concernés.

Supervision

Office hours   Yes
Assistants   No
Forum   No

Resources

Bibliography

"Rational Quadratic Forms" by J.W.S. Cassels

Ressources en bibliothèque

- "Rational Quadratic Forms"