

國立中正大學數學系
暨應用數學碩士班、統計科學碩士班
學 術 演 講

Student Seminar at CCU

An Invitation to Algebraic Geometry

Lecturer: 台灣大學數學系 陳榮凱 Jungkai Chen 講座教授

Email: jkchen@ntu.edu.tw

Room: Math312

Time: 15:00 – 17:00 on Monday

(bi-weekly starting from 2/20/2023)

Abstract

This is a biweekly seminar. The purpose is to provide an intuitive introduction to modern algebraic geometry. The students or faculty members who have interest in this topic are welcome to attend this seminar.

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References:

[1] W. Fulton, *Algebraic Curves*

[2] R. Hartshorne, *Algebraic Geometry*

It is recommended to read sections 1.1-1.7 and 2.1-2.5 of [1] by yourselves in advance.

Syllabus

Week 1 (2/20)

Lecture 1: Projective space, projective varieties

Ref: [1, section 4.1, 4.2, 5.1]

Week 2(2/27)

National holiday

Week 3 (3/6)

Lecture 2: Bezout's theorem and intersection theory

Ref: [1, section 3.1, 3.2, 3.3, 5.3]

Week 4, 5

NCTS Higher Dimensional Algebraic Geometry

3/13-3/17 mini-courses

3/20-3/24 workshop

Week 6 (3/27)

Lecture 3: Singularities and blowups

Ref: [1, chapter 7]

Week 7 (4/3)

Spring break

Week 8 (4/10)

Midterm week 4/10-4/14

Week 9 (4/17)

Lecture 4: Canonical divisors and Riemann-Roch theorem for curves

Ref: [1, chapter 8]

Week 10 (4/24)

TA session

Week 11 (5/1)

Lecture 5: Riemann-Roch theorem for surfaces

Ref: [2, section V.1]

Week 12 (5/8)

TA session

Week 13 (5/15)

Lecture 6: Projective morphisms

Week 14 (5/22)

TA session

Week 15(5/29)

Lecture 7: Vanishing theorem and extension theorem

Week 16 (6/5)

Presentation