MATH 4907/6101, Winter 2018
Topics in Algebra
Topic: Introduction to Noncommutative Algebraic Geometry

Carleton University

School of Mathematics and Statistics

INSTRUCTOR

Colin Ingalls

CLASS TIMES

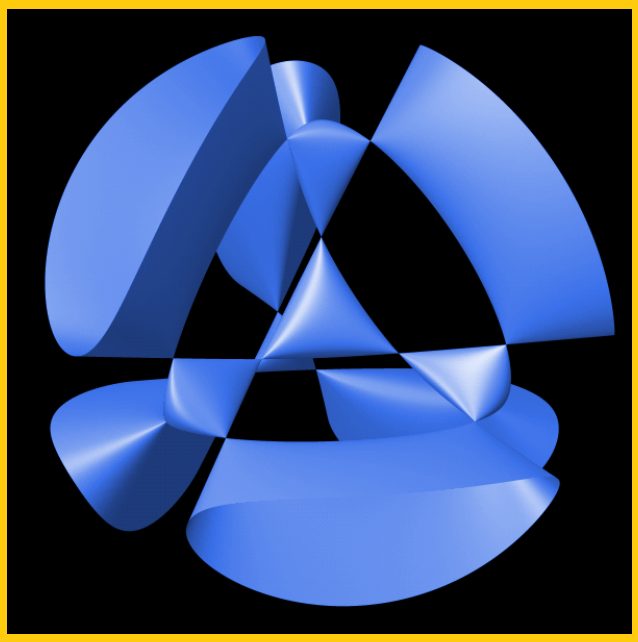
Tue Thu 10:05 – 11:25

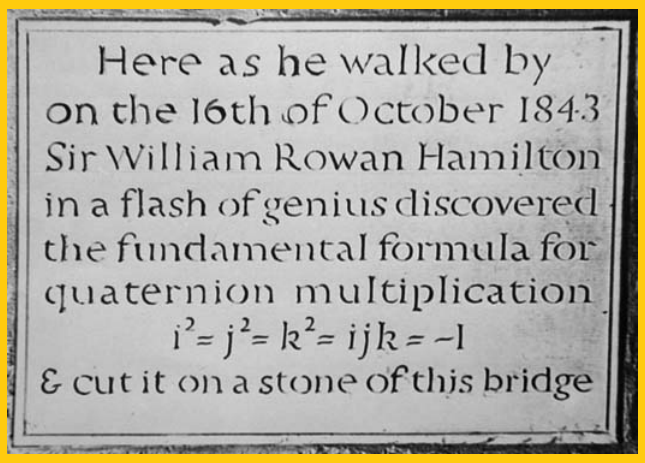
LOCATION

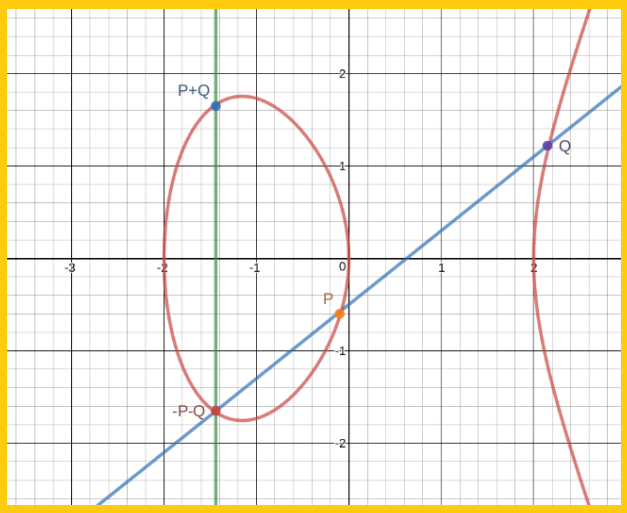
230 Tory Building

Recommended: Taking this course concurrently with M4107 and/or M4306.

Prerequisite: MATH 3158 or permission of the School.







COURSE DESCRIPTION

Noncommutative Algebraic Geometry studies the interplay between noncommutative algebra and geometric methods and ideas. Noncommutative algebra plays a key role in quantum mechanics and representation theory. We will discuss hereditary orders, skew group rings and noncommutative curves and surfaces. Algebras of polynomial differential operators and algebras associated to elliptic curves will also be studied.

- Are there matrix solutions to $yx - xy = I$
- For a fixed $q \in \mathbb{C}^*$ are there matrix solutions to

$$yx = qxy?$$

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$$\mathbb{H} = \mathbb{R} \oplus \mathbb{R}i \oplus \mathbb{R}j \oplus \mathbb{R}k$$

$$\mathbb{H} \otimes \mathbb{H} = \mathbb{R}^{4\times 4}$$