

## *Noncommutative algebraic geometry*

**Alexander Perry**<sup>1</sup>

<sup>1</sup> (University of Michigan, USA)

**Abstract:** The premise of noncommutative algebraic geometry is that any category sufficiently similar to the derived category of an algebraic variety should be regarded as (the derived category of) a “noncommutative algebraic variety”. The goal of this course is to survey this field and some of its applications. In particular, I plan to discuss the following topics.

1. Constructions of interesting noncommutative algebraic varieties, often as semiorthogonal components of the derived categories of Fano varieties.
2. Moduli spaces of Bridgeland stable objects, which give a way to extract ordinary spaces from noncommutative ones.
3. Applications to birational geometry, Hodge theory, and Brauer groups.