

Course description

Smooth 4-manifolds and Seiberg--Witten theory

Seiberg--Witten theory was introduced about 20 years ago. Using non-linear PDEs from physics, this theory constructs invariants for smooth 4-manifolds.

In this course, we will give a brief introduction to Seiberg--Witten theory. We will start with basic properties and constructions of smooth 4-manifolds, then we will discuss the definition and applications of Seiberg--Witten theory. The aspects of Seiberg--Witten theory we will discuss include: the adjunction inequality, gluing formulas, Donaldson's diagonalization theorem, Taubes' theorem, the Furuta--Bauer theory.

Prerequisite: Ma 151, 157, 110.

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