Instructor: Dori Bejleri (bejleri@math.harvard.edu)

Course description: Given a collection of algebraic equations, can we find a parametrization of the set of solutions by rational functions? This is one of the most fundamental questions in algebraic geometry and leads to the notion of rationality and its various generalizations (stable rationality, unirationality, rational connectedness). In this class we will survey some classical results, recent breakthroughs and open problems in the study of rationality. Possible topics include the Lüroth problem, decomposition of the diagonal, the degeneration method, the behavior of rationality in families, (stable) rationality of hypersurfaces, etc.

Course website

Time and place: Monday + Wednesday 12:00pm - 1:15pm in Science Center 304.

Office hours: By appointment, Science Center 525.

Prerequisites: Algebraic geometry at the level of a first year graduate course (e.g. chapters 2 and 3 of Hartshorne's Algebraic Geometry). Some algebraic topology may also be useful.

Grades: The grade for undergraduate students will be based off of course participation and a final presentation on a topic related to the course material.