



Ben Gurion University - Mathematics
Algebraic Geometry and Number Theory Seminar

Speaker **Tomer Schlank (HU)**
Title **Homotopical Obstructions and the unramified Inverse Galois problem**
Date Wednesday, 26 April 2017
Time 15:10 – 16:30 (starts 15:10 sharp)
Location Room -101 in Building 58

Abstract Given a number field K , the unramified Inverse Galois problem is concerned with the question which finite groups G can be realized as Galois groups of Galois unramified extensions L/K . The two main ways to attack the problem is by using class field theory (to analyze solvable extensions) and discriminant bounds (to analyze Fields K of small discriminant). The goal of this talk is to show how using homotopical methods one can get results in the non-solvable case with no bound on the discriminant. We will begin by describing a general method to obtain homotopy theoretical obstructions to problems in Galois theory called "Embedding problems". Then we will explain how to employ these obstructions to study the unramified inverse Galois problem. Specifically, using these obstructions on embedding problems with a non-solvable kernel, we'll give an example of an infinite family of groups $\{G_i\}_i$ together with an infinite family of quadratic number fields such that for any number field K in this family, the maximal solvable quotient of G_i is realizable as an unramified Galois group over K ; but G_i itself is not.

This is a joint work with Magnus Carlson

(updated 6 Apr 2017)