Mathematics Department Colloquium

Speaker: Dr. Rachel L. Petrik, Department of Mathematics, University of Kentucky, Lexington

Title: Solutions to Systems of Equations over Finite Fields

Date: Monday December 9, 2019

Time: 2:00pm to 3:00pm.

Place: James Hall 2100

Abstract: Solving systems of equations is among the most classical mathematical problems. In number theory, we are particularly interested in integer solutions to systems of equations. A necessary condition for the existence of an integer solution is the existence of a solution over the finite field, F_p, for every prime p. In the study of systems of polynomials over finite fields, there are typically three questions one can ask.

1. Can we find and describe all solutions?

2. How many solutions are there?

3. When does there exist at least one solution?

In this talk, I will introduce some classical results in the area and then discuss my contributions to the field, including my improvements to the Chevalley-Warning bounds.