

# ISU Algebra Seminar



**Title:** Hyperplane Arrangements

**Speaker:** Sunil Chebolu

**Location:** STV 310

**Time:** Noon- 12:50 pm on Thursday (01/30/20)

**Abstract:**

A hyperplane in  $\mathbb{R}^n$  is just a co-dimension one subspace. A collection of hyperplanes in  $\mathbb{R}^n$  is called a Hyperplane arrangement. These arrangements are important mathematical objects and they arise frequently in algebra, geometry and combinatorics. One can also study these arrangements over finite fields and other rings where not much is known. In joint work with Papa Sissokho, we considered the problem of counting the number of points in the complement of a specific hyperplane arrangement over the field of  $p$  elements. This problem is considered intractable and our recent work on this problem has led to number of interesting connections to the Hadamard problem, zero-sum free sequences, Mathieu-Zhao subspaces, and the distribution of the values of the Euler-phi function. I will build the necessary background in my first talk and in the second talk, I will discuss some of our results.