



**Speaker:** Charles Doran  
University of Edmonton, Alberta, Canada

Monday, October 21, 2013  
11:00 AM  
258 Hurley Hall

**Title:** The Mathematics of Supersymmetry: Graphs, Codes, and Super-Curves

**Abstract:**

In physics, supersymmetry is a pairing between bosons and fermions appearing in theories of subatomic particles. One may study supersymmetry mathematically by using Adinkras, which are graphs with vertices representing the particles in a supersymmetric theory and edges corresponding to the supersymmetry pairings. In combinatorial terms, Adinkras are  $N$ -regular, edge  $N$ -colored bipartite graphs with signs assigned to the edges and heights assigned to the vertices, subject to certain conditions. We will see how to capture some of the structure of an Adinkra using binary linear error-correcting codes, and all of it using a very special case of a geometric construction due to Grothendieck. The talk is designed to be accessible to an undergraduate audience.