



## Colloquium

April 10, 4:05 p.m. (9<sup>th</sup> Period)  
(in the Atrium)

**Speaker:** Dr. Alexandre Turull

**Title:** Finite Groups and their Representations as Groups of  
Matrices

### Abstract

Abstract: Finite groups are mathematical objects that describe symmetry. One of the greatest mathematical achievements is the classification of the finite simple groups, so that we know the building blocks of all finite groups. Given a finite group  $G$ , the representations of  $G$  describe possible sets of concrete symmetries of objects contained in vector spaces. In other words, the representations of  $G$  are the homomorphisms  $\rho : G \rightarrow GL(n, F)$ , for  $F$  a field. The representation theory of finite groups studies the relationships between a group and its representations. We will start the talk by a quick overview of classification theorem and its historical importance. We will then describe some properties and conjectures on the representations of finite groups. Knowledge of the simple groups can be leveraged for a better understanding of the representation theory. The level will be suitable for beginning mathematics graduate students.