Math 595 FALL 2015

Instructor: P. Di Francesco

Title: Cluster Algebras

Abstract:

Cluster algebras were invented in 2000 as a theoretical framework for understanding the Laurent phenomenon: how to ensure that solutions to a given discrete evolution equation will always be Laurent polynomials of the initial data. Cluster algebras have found a host of applications in mathematics and physics, ranging from combinatorics (Somos sequences, friezes, tensor product multiplicities) to geometry (triangulations of Teichmüller space), and from gauge theory to dimer models of statistical physics.

We will cover various aspects of Cluster algebras, in relation with combinatorics, statistical physics, representation theory and discrete integrable systems. Tools employed will be constructed and developed as we go, and no prior knowledge is required apart from basic algebra and linear algebra.

Method of assessment:

Class participation, response to open homework problems.

Time:

Tue-Th 11:00-12:20