Update on unimodular triangulations
Christian Haase, 21st April 2015, Cologne

Abstract: A lattice polytope is a polytope with integer vertices. A lattice simplex is unimodular if every integer point is an integral affine combination of simplex vertices. A triangulation is unimodular if all its simplices are.

Popular belief has it that the average lattice polytope you pick up on the street will not have a unimodular triangulation. Yet, many 'interesting' polytopes do, in each case yielding a theorem – ranging from Enumerative Combinatorics, to Integer Programming, to Algebraic Geometry.

In this talk I will present several instances of interesting polytopes admitting a unimodular triangulation. The latest addition to the family being the 'lecture hall simplex' arising in partition analysis.

This is joint work with Andreas Paffenholz (Darmstadt), Lindsay Piechnik (High Point), and Francisco Santos (Santander).