Berlin Mathematical School

BMS Kovalevskaya Colloquium

Friday 8 June 2012 at 14:15
Tea before the lecture begins at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin

Karen Vogtmann
(Cornell U)

Outer spaces

The idea of geometric group theory is to realize a group G as symmetries of a geometric object X, then use geometric and topological properties of X to extract algebraic information about G.

If we want to study the automorphism group of G we can use known actions of G to bootstrap as follows. Any action of G on a space X can be twisted by an automorphism of G to produce a new action of G on the same X, so the automorphism group of G acts on the set of actions of G. Actually, since actions don't generally preserve basepoints it is more natural to think of the outer automorphism group acting on the set of actions. We define an Outer space for G to be an Out(G) - invariant subset of actions which can be topologized in a natural way so that it is contractible.

Karen Vogtmann will describe classical Outer spaces for free abelian groups (which will be familiar) and free non-abelian groups (which may be less familiar), and show how these can be used to study algebraic properties of Out(G). At the end she will describe joint work with Ruth Charney on new Outer spaces for the in-between class of right-angled Artin groups.

Karen Vogtmann is the Goldwin Smith Professor of Mathematics at Cornell University. Her principal fields of interest are geometric group theory, low-dimensional topology and cohomology of groups.

From 2003 to 2006, Karen Vogtmann was Vice-President of the American Mathematical Society. She gave an Invited Lecture at the ICM in Madrid in 2006 and the annual AWM Noether Lecture in 2007. Vogtmann was selected to deliver the Noether Lecture for „her fundamental contributions to geometric group theory; in particular, to the study of the automorphism group of a free group".

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