



Berlin  
Mathematical  
School

## BMS Kovalevskaya Colloquium

Friday 12 June 2015 at 14:15

*Tea & Cookies starting at 13:00*

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

### Nathalie Wahl

*(University of Copenhagen)*

#### Stabilizing symmetries

The group of permutations of  $n$  letters or the group of invertible  $n \times n$  matrices are examples of groups that come in a family indexed by the natural numbers.

Given such a family of groups and an invariant for groups, one can ask whether this invariant for the one group relates well to the same invariant for the next group in the sequence. When the invariant in question is the homology of the group, such a good relationship exists for many families of groups, and is now known as the phenomenon of “homological stability”. The first examples arose in the late 60s, with permutation groups, braid groups, and many types of linear groups. In the late 80s, Harer showed that certain groups of symmetries of surfaces exhibited the same phenomenon, and this triggered a second wave of examples with groups such as automorphisms of free groups of increasing rank or symmetries of 3-manifolds. The goal of the talk is to give an idea of what is common in all these examples, and how, looking at all of them through the appropriate glasses, one can prove all these stabilization results in one go.

Nathalie Wahl is a professor of mathematics at U Copenhagen. Her research interests are algebraic topology, homotopy theory and geometric topology. After completing her PhD at U Oxford, Wahl was assistant professor at U Northwestern and U Aarhus. In 2005, she became an L. E. Dickson Instructor at U Chicago. In 2008, Wahl was awarded the “Young Danish Elite Researcher Prize” and, in 2009, she received both the “Female Research Leader Award” of the Danish Council of Independent Research and an ERC Starting Grant. Wahl accepted a full professorship at U Copenhagen in 2010 and spent five months as a research professor at MSRI in 2014.



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