Centre for Symmetry and Deformation

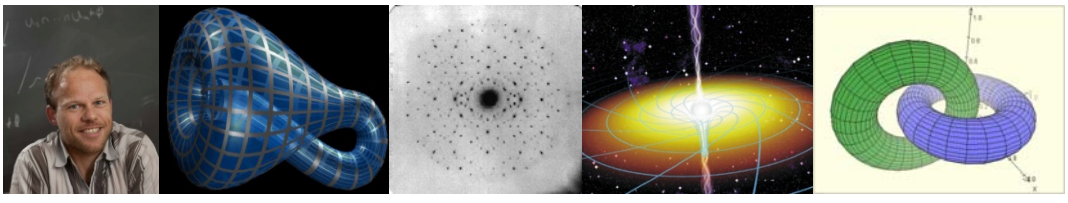
Department of Mathematical Sciences, University of Copenhagen

Aim and vision: The goal of the Centre for Symmetry and Deformation is to understand the mathematics behind symmetry and deformation. Symmetry is one of the most fundamental notions in nature: In physics it gives rise to conservation laws, in chemistry it determines the structure of molecules, and in evolutionary biology, as well as other aspects of life, it often underlies the notion of "beauty". The symmetries of a geometric object are however not stable under deformation: Whereas a perfectly round sphere has all rotational and reflectional symmetries, deforming the sphere slightly destroys these symmetries. The center aims to reconcile this, combining the mathematical disciplines of group theory, homotopy theory, and non-commutative geometry in a novel way, to study symmetry deformation invariantly.

Questions and methods: We pose the following broad questions:

- Given a geometric object, what kind of "intrinsic", deformation invariant, symmetries does it possess?
- What are the possible abstract symmetries, integrally and at a prime number p?

Our method of approach involves various notions of classifying spaces, spaces that classify or parameterize other mathematical objects, which we use to encode symmetries. We furthermore use techniques imported from number theory of studying phenomena one prime at a time.



Info: The Centre for Symmetry and Deformation is based at the Department of Mathematical Sciences, University of Copenhagen, and is funded by the Danish National Research Foundation. The center is headed by Prof. Jesper Grodal and consists of 9 permanent faculty and around 20 postdocs and PhD-students, as well as numerous associated faculty and visitors.

More information: Please see our webpage http://sym.math.ku.dk

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