

Abstract

Oberwolfach Workshop:

Cluster Algebras and Its Applications

Dates:

14 Jan - 19 Jan 2024 (Code: 2403)

Organizers:

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Cluster algebras are commutative algebras with a special combinatorial structure which are related to various fields in mathematics and physics. Introduced by Fomin and Zelevinsky in 2002 in the context of Lie theory and total positivity, cluster algebras quickly developed deep connections to quite different disciplines including combinatorics, representation theory, algebraic geometry, hyperbolic geometry, group theory, dynamical systems and mathematical physics. The theory of cluster algebras has grown into one of the most active research areas in mathematics; for example the 2002 paper "Cluster Algebras I" by Fomin and Zelevinsky has more than 2400 citations according to Google Scholar.

A particularly active branch is the relation between cluster algebras and the representation theory of finite dimensional algebras. These grew from categorical models for cluster algebras. This connection caused a burst of activity in representation theory which provided a new understanding of classical results and led to many new developments. In the other direction, the categorifications of cluster algebras proved to be powerful tools to obtain deep results in cluster algebras.

This workshop will focus on interactions between cluster algebras and representation theory and on interdisciplinary applications of cluster algebras. It will bring together researchers from different areas in order to promote interaction between researchers in different fields and to provide a platform for the state of the art on research in cluster algebras and its applications.