FIM Nachdiplomvorlesung

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Cluster Algebras

March 1 - May 31, 2011
Tuesdays 10.15 - 12.00h
HG G 43
ETH Zürich, Rämistrasse 101

Abstract

Cluster algebras, which are certain commutative algebras defined by combinatorial data - for example, a skew-symmetric matrix - were introduced by Fomin and Zelevinsky in order to study the multiplicative structure of the dual canonical basis of a quantized enveloping algebra associated to a simple Lie algebra. Other motivations included the theory of total positivity of matrices and integer sequences exhibiting Laurent behaviour, such as some Somos sequences. This beautiful theory has lead to some remarkable new developments over the past few years.

The aim of these lectures is to introduce the theory of cluster algebras and to describe some of their applications. It is planned that this will include the Laurent phenomenon, periodicity, the classification of cluster algebras of finite type by Dynkin diagrams, cluster algebras of finite mutation type and links with combinatorial objects.

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