Bernhard Keller

Cluster algebras and representation theory

Abstract

Cluster algebras were invented by Fomin-Zelevinsky around the year 2000. They are certain commutative algebras endowed with a rich combinatorial structure. Fomin-Zelevinsky's motivations came from Lie theory but it soon turned out that cluster algebras are linked to an astounding variety of subjects both in mathematics and in physics. In this survey talk, we will present the definition of cluster algebras, which is completely elementary, and show how their interaction with representation theory has had a deep and fruitful impact on both subjects. We will conclude with a glimpse of some of the most exciting ongoing research in the area.