



# Frontiers of Mathematics Lecture

## From Coxeter-Conway friezes to cluster algebras

### Abstract

Induction is a powerful construction tool, both in elementary and in advanced mathematics. The talk will illustrate this basic observation. More precisely, we will see how the remarkable integrality and periodicity properties of the Coxeter-Conway friezes and the Somos sequence find a beautiful unification and generalization in the theory of cluster algebras introduced by Sergei Fomin and Andrei Zelevinsky in 2002. Apart from induction, we will only need addition, multiplication and division of integer coefficient polynomials in several variables.

### Biography

Bernhard Keller is a professor at the Université Paris Cité. He received in 1990 his PhD from the University of Zurich under Pierre Gabriel with the thesis *On Derived Categories*.

His research is in homological algebra and the representation theory of quivers and finite-dimensional algebras. He has applied triangulated Calabi–Yau categories to the (additive) categorification of cluster algebras. In 2013, he received an honorary degree from the University of Antwerp. In 2014 he received the Sophie Germain Prize. He was an Invited Speaker at the International Congress of Mathematicians in Madrid in 2006, with a talk *On differential graded categories*. Keller is a fellow of the American Mathematical Society.



### Professor Bernhard KELLER

Université Paris Cité  
Paris, France

Date :  
September 19, 2023 (Tuesday)

Time :  
5:00 – 6:00 pm  
(Tea Reception starts at 4:30 pm)

Venue :  
P2, Chong Yuet Ming  
Physics Building,  
The University of Hong Kong