ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

Factorization Theory in Cluster Algebras: A Computational Approach

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Chaired by Roswitha Rissner | Department of Mathematics

Wednesday, 15 October 2025 | 11:00–12:30

HS 8 !

ABSTRACT

Mathematics is often the science of decomposition: we search for the ”atoms” or ”building blocks” that combine to create larger, more intricate structures. Cluster Algebras—born from surprisingly simple schemes like the triangulations of polygons and surfaces—provide an exceptionally fertile playground to explore this question. In this talk, we will introduce Cluster Algebras through intuitive examples from classical geometry, explaining their fundamental properties and their connection to combinatorics. Next, we will move into a very old question: Can the elements in these algebras be uniquely decomposed into irreducible factors, just as integers are factored into prime numbers? When this uniqueness fails, how do we measure and quantify that failure? We will conclude by presenting a newly developed computational approach to determine all possible factorizations of elements in a large class of Cluster Algebras.

We hope to see you there!