

IMAR Monthly Lecture

What is a Hall algebra (and what is it good for)?

Olivier Schiffmann

Université Paris-Saclay & IMAR

Thursday, December 18, 2025, 12:00

IMAR, *Miron Nicolescu* amphitheater

Abstract: In the early 90s, Claus Ringel invented a simple and beautiful way to attach to a “nice” category - typically the category of representations of a finite-dimensional algebra, or vector bundles on a smooth projective manifold - an associative algebra which encodes the structure of morphisms and extensions between objects. As he remarked himself, the first instance of this construction in fact goes back to the work of Steinitz, in the early days of the 20th century on finite abelian p -groups, and to the work of P. Hall on symmetric functions. This construction, now known as the *Hall*, or *Ringel-Hall algebra*, has found numerous applications in algebra, representation theory and also algebraic (enumerative) geometry. We will describe the construction and its history, give several examples and end with some recent applications in geometry.