Rational Invariants of Finite Abelian Groups

George Labahn
University of Waterloo (Canada)

glabahn@uwaterloo.ca

Abstract

In this talk we study the field of rational invariants of the linear action of a finite abelian group in the non modular case. By diagonalization, the group is accurately described by an integer matrix of exponents. Making use of integer linear algebra we show how to compute a minimal generating set of invariants along with the substitution to rewrite any invariant in terms of this generating set. This generating set can be chosen to consist of polynomial invariants.

As an application, we provide a symmetry reduction scheme for dynamical and polynomial systems whose solution set is invariant by the group action. In addition we provide an algorithm to find such symmetries given a dynamical or polynomial system.

This is joint work with Evelyne Hubert (INRIA Méditerranée, France)

Keywords
Group actions, rational invariants, integer linear algebra, polynomial system, dynamic systems