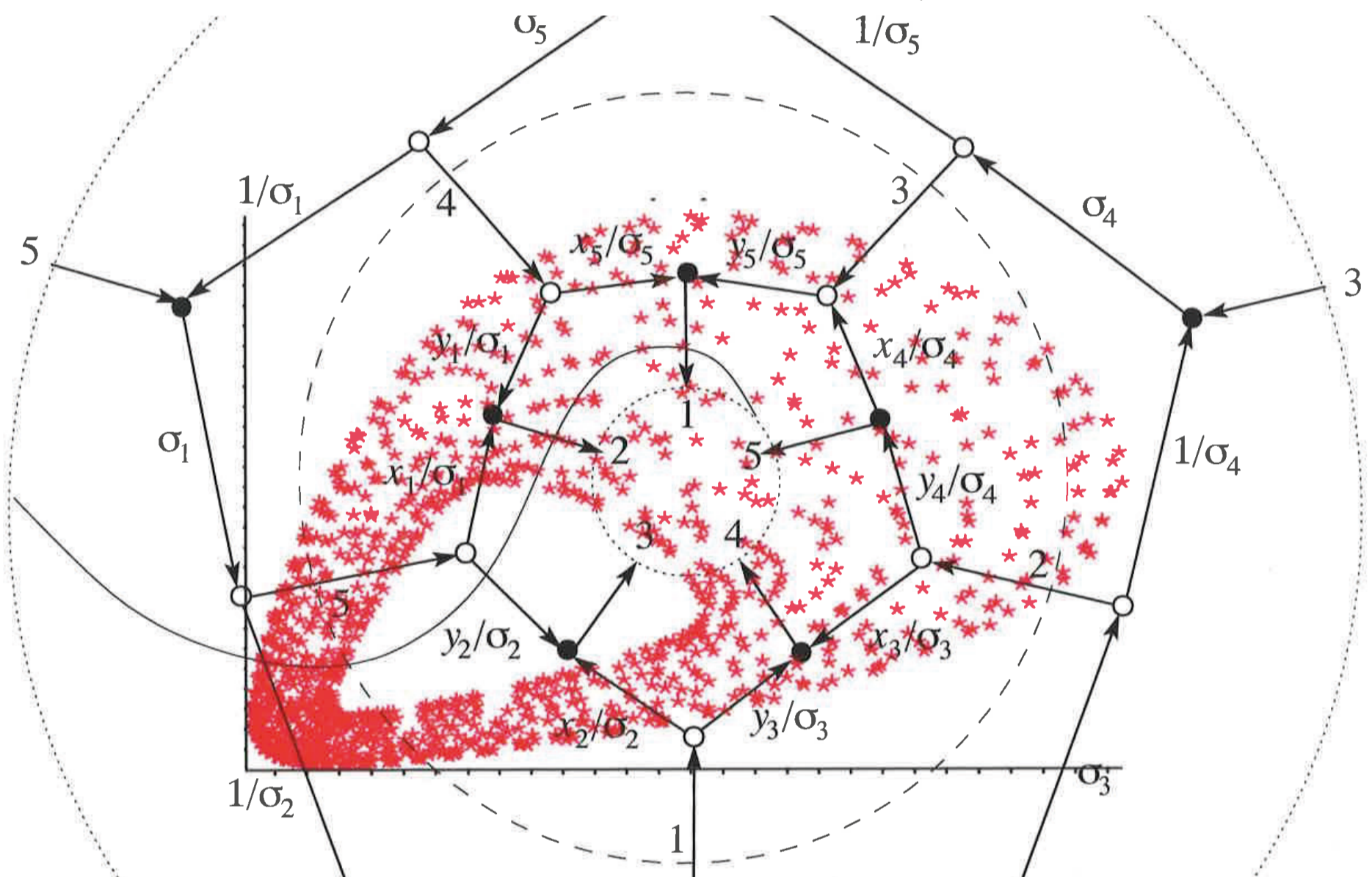# HEIDELBERG LECTURES IN MATHEMATICS AND PHYSICS
## MICHAEL GEKHTMAN
### (UNIVERSITY OF NOTRE DAME, USA)



**Wednesdays 2-4pm, Mathematikon, INF 205 SR C,** Start 06.06.2018

# ALGEBRAIC METHODS IN THE THEORY OF INTEGRABLE SYSTEMS

**Abstract:**

We will start by reviewing classical theory and examples of Liouville completely integrable systems of classical Hamiltonian mechanics. Then the modern theory of integrable models will be discussed including :

- Lax formalism for finite and infinite dimensional systems;

- integrable equations on Lie algebras and Poisson-Lie groups;

- integrable equations and nonlinear waves: the Sato Grassmannian and the KP hierarchy and its reductions;

- discrete integrable systems and connection with the theory of cluster algebras.

Part of the Focus Semester. Focus Semester *Symplectic Dynamics* at MAThematics Center Heidelberg (MATCH)