

A soft introduction to algebraic entropy

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Timetable: 10 hrs. First lecture on February 18, 2014 (dates already fixed, see the calendar), Torre Archimede, Room 2BC/30.

Course requirements: Linear Algebra, Basic Algebra.

Examination and grading: Seminar on a subject assigned by the Instructor.

SSD: MAT/02, MAT/03

Aim: The course is an introduction to the theory of algebraic entropy of endomorphisms of algebraic structures in the basic setting of vector spaces over a field K . The two main results on this topic are presented: the Addition Theorem and the characterization of the algebraic entropy as the unique additive invariant extending the dimension invariant via the Bernoulli functor from the category of K -vector spaces to the category of $K[X]$ -modules.

Course contents:

1. Preliminaries on vector spaces, modules over PID's and the Fekete Lemma.
2. The category of flows of a linear transformation. The Bernoulli shift and the Bernoulli functor.
3. Definition, existence and properties of the algebraic entropy.
4. Algebraic entropy as rank of $K[X]$ -modules. Addition and Uniqueness Theorems.
5. Adjoint algebraic entropy.