

A soft introduction to algebraic entropy

Prof. Luigi Salce¹

¹University of PADOVA
Department of Maths
Email: salce@math.unipd.it

Timetable: 12 hrs. First lecture on February 21, 2017, 10:00 (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. Extensions to endomorphisms of Abelian groups and modules are outlined.

Course contents:

1. Preliminaries on vector spaces, modules over PIDs 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.
6. Algebraic entropies on Abelian groups and modules.