



K -Theory in Linear Systems Theory

Angel Luis Muñoz Castañeda¹, Miguel V. Carriegos²

A categorical approach to linear control systems is introduced in [1] and [2] where feedback actions on linear control systems induce a symmetric monoidal structure on this category S_R . Stable feedback isomorphisms [2] generalize dynamic enlargement of pairs of matrices and it is shown how the stable feedback isomorphisms in the category of locally Brunovsky linear control systems, B_R , are characterized by the Grothendieck group $K_0(B_R)$. The goal of this talk will be to describe this link between the classification of linear control systems over a ring R and the K-theory of the base ring. Higher K-theory of the category B_R will be also addressed.

Referencias

- [1] M.V. Carriegos: Enumeration of classes of linear systems via equations and via partitions in a ordered abelian monoid, *Lin. Algebra App.*, **438** (2013).
- [2] M.V. Carriegos, A.L. Munoz Castaneda: On the K-theory of feedback actions on linear systems, *Lin. Algebra App.* **440** (2014).

¹Institut für Mathematik und Informatik
Freie Universität Berlin
14195 Berlin
angel@math.fu-berlin.de

²Departamento de Matemáticas
Universidad de León
24071 León
miguel.carriegos@unileon.es