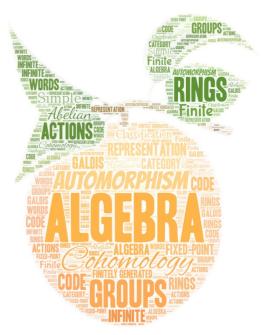
## Seminari Al@Bicocca

You are all welcome to the next bite of the series "Al@Bicocca" which is meant to give you a small taste of the Algebra at Bicocca and beyond



20 February 2020 2:30 p.m. Antonio Ioppolo

Universidade Estadual de Campinas

## Room 3014 - U5

Department MatApp University of Milan-Bicocca Via R. Cozzi 55 Milano (IT)

**Organizers:** Ilaria Castellano Claudio Quadrelli

## "Some PI-results in algebras with trace"

Abstract: Let A be an associative algebra over a field  $\mathbb{F}$  of characteristic zero and  $c_n(A)$  its sequence of codimensions. Such a sequence was introduced by Regev in 1972 to provide an effective way of measuring the identities satisfied by A: every PI-algebra A, i.e., an algebra satisfying a non-trivial identity, has codimension sequence exponentially bounded.

If  $\mathscr{V}$  is a variety of algebras generated by A, i.e.,  $\mathscr{V} = var(A)$ , the growth of  $\mathscr{V}$  is defined as the growth of the codimension sequence of A. A celebrated theorem of Kemer characterizes the varieties of polynomial growth as follows:  $\mathscr{V}$  has polynomial growth if and only if  $G, UT_2 \notin \mathscr{V}$ , where G denotes the infinite dimensional Grassmann algebra over  $\mathbb{F}$  and  $UT_2$  is the algebra of  $2 \times 2$  upper-triangular matrices over  $\mathbb{F}$ ; moreover, var(G) and  $var(UT_2)$  are the only varieties of almost polynomial growth.

In this talk I will present an analogous result of Kemer's characterisation in the context of unitary associative  $\mathbb{F}$ -algebras that are endowed with a trace map *tr*.