

TECHNION MATH COLLOQUIUM



"Generating Algebras."

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29.7.24, 15:30, Amado 232

Abstract:

Let K be a field. The Primitive Element Theorem says that every (finite dimensional) separable extension of K can be generated by 1 element. A folklore theorem says that every central simple K -algebra (e.g., a matrix algebra) can be generated by 2 elements. Can one prove similar bounds on the number of generators for suitable algebras over (commutative) rings? I will discuss some recent progress on this problem based on geometry: both lower and upper bounds may be obtained by studying the space of r -tuples of generators of the algebra.

For example, the R -algebras which naturally generalize the central simple K -algebras of degree n are known as Azumaya algebras of degree n . We show that if R is finitely generated over K and has Krull dimension d , then every such algebra can be generated by $2 + \lfloor d/(n-1) \rfloor$ elements, and there are examples requiring at least half that many elements to generate.

"Light refreshments will be served at 15:00 at the faculty lounge on the 8th floor."