

On the lengths of some generating sets of matrix algebras

THOMAS J. LAFFEY

*School of Mathematics and Statistics
University College Dublin (Ireland)*

thomas.laffey@ucd.ie

Suppose that S is a set of generators of the full algebra \mathcal{A} of $n \times n$ complex matrices. The least integer k for which the monomials in the elements of S of degree at most k span \mathcal{A} is called the *length* of S . A conjecture of Paz (LAMA **15** (1984) 161-170) states that the length of S is at most $2n - 2$. If true, the conjecture is best possible, since examples are known where the bound $2n - 2$ is achieved.

In this talk, we will consider a number of generating sets, mostly consisting of matrices with quadratic or cubic minimal polynomials, which one might expect to have large length, and verify Paz's conjecture for them. We will also discuss approaches to proving weaker versions of the conjecture.

This work is based on a collaboration with HELENA ŠMIGOC (University College Dublin) and ALEXANDER GUTERMAN and OLGA MARKOVA (Moscow State University).