On the minimum number of Toeplitz factors of a matrix and connections with operator theory

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Abstract: Recently, Ye and Lim showed that every $n \times n$ matrix can be decomposed as the product of $2n + 5$ Toeplitz matrices, and generically as $\left\lfloor \frac{n}{2} \right\rfloor + 1$. They proposed a conjecture claiming that the generic bound always holds. In this talk, we provide a counterexample to this conjecture. We will illustrate the relevance of such factorizations for potential solutions to relevant problems in Operator Theory.

This is a joint work with Irene Márquez-Corbella (Univ. de La Laguna) and Ignacio García Marco (Univ. de La Laguna).