# Persistent symmetric tensors

Giorgio Ottaviani*[1]

[1]Università di Firenze – Italy

**Abstract**

Persistent tensors were introduced by Gharahi and Lysikov via a recursive construction inspired by quantum information theory. In a nutshell, they constitute a class of tensors that remain well-behaved under the substitution method and, consequently, admit nontrivial lower bounds on tensor rank. In a work joint with Gharahi, we investigate the symmetric case-namely, symmetric persistent tensors, or equivalently, persistent polynomials. We establish that a symmetric tensor is persistent if the determinant of its Hessian equals the power of a nonzero linear form. The converse is verified for cubic tensors and in small dimension, by leveraging classical results of B. Segre. We discuss connections with invariants of some prehomogeneous spaces, homaloidal polynomials, and Legendre transforms.

*Speaker