Martedì 21 novembre 2017 ore 15.00
Aula 7

Daniele Taufer
(Dottorando Università di Trento)

SYMMETRIC TENSOR DECOMPOSITION

Abstract:
The problem of decomposing symmetric tensors by using only simple tensors arises naturally both in algebraic and in real-world applications. In turn, it happens to be equivalent to the problem of decomposing homogenous polynomials in any number of variables as sums of the minimal number of powers of linear forms, which is exactly the problem we address in this talk.

This problem is difficult in general and we present an algorithm proposed in 2009 which exploits many fascinating algebraic tools (such as Stickelberger consequences, Henkel operators, Inverse System Theory, Essential Variables Theory, etc.) to achieve such a minimal decomposition.

Despite its theoretical relevance, this algorithm experiences some difficulties on large classes of polynomials, for several reasons that we discuss. We propose some changes that solve these issues and that eventually produce a version of the algorithm of which we can actually prove the output correctness.

Finally, we discuss some further improvements and future work that might be pursued in this direction.

Referente: Alessandra Bernardi