

TUNISIAN WOMEN MATHEMATICIANS' ASSOCIATION (TWMA)

& LABORATOIRE D'INGENIERIE MATHÉMATIQUE (LIM) DE L'ÉCOLE POLYTECHNIQUE DE TUNISIE



Conference by Skander BELHAJ (ISAMM & ENIT-LAMSIN)

École Polytechnique de Tunisie, Amphi Ibn Haïthem



Wednesday 07 February 2018, 14h-15h

Title

Structured matrix methods for blind image deconvolution

Abstract

Blind image deconvolution is a very important problem in image processing because of the wide range of applications such as astronomical imaging, medical imaging, remote sensing, in which blurred images arise. It is shown that structured matrices (Bezout, Hankel, Sylvester) can be used to achieve image deblurring, more specifically by computing the approximate greatest common divisor of polynomials. The talk will include fast algorithms for computing the univariate GCD of several polynomials (not pairwise) based on structured matrix methods by using Barnett's method as well as the singular values decomposition (SVD) and the null space of our matrices. A specialized algorithm for computing the GCD of bivariate polynomials of blurred images to recover the original image, and experimental results that show the effectiveness of the proposed algorithms will be included.