Mathematics Department Colloquium

Wednesday March 6th

Fiterman Hall Room 601

Start: 3 pm

COMPLEX AND REAL POLYNOMIAL ROOT APPROXIMATION VIA DOMINANT EIGENSPACES

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Abstract. Finding the roots of polynomials is a very old and noble problem in Mathematics. For about 4,000 years, various approaches have been proposed to solve this problem. In 1824 Niels Abel showed that there existed polynomials of degree five, whose roots could not be expressed using radicals and arithmetic operations on their coefficients. After a brief explanation of Abel's discovery and its implications in Computational Mathematics, I will present heuristic methods to generate Dominant Eigenspaces and use them to approximate roots of polynomials. Since these methods are constructive they can be implemented as algorithms in MATLAB, MATHEMATICA, or PYTHON for further testing and research.