

On Chebyshev Polynomials of Matrices

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The m th Chebyshev polynomial of a square matrix A is the monic polynomial that minimizes the matrix 2-norm of $p(A)$ over all monic polynomials $p(z)$ of degree m . This polynomial is uniquely defined if m is less than the degree of the minimal polynomial of A . In this talk we study general properties of Chebyshev polynomials of matrices, which in some cases turn out to be generalizations of well known properties of Chebyshev polynomials of compact sets in the complex plane.

We also derive explicit formulas of the Chebyshev polynomials of certain classes of matrices.

References

- [1] V. FABER, J. LIESEN AND P. TICHÝ, *On Chebyshev Polynomials of Matrices*, submitted, 2009.