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Some basic results on Weighted Polynomial Approximation

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Some basic results on Weighted Polynomial Approximation
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Chebyshev polynomials play a fundamental role in polynomial approximation. Their study dates back to Chebyshev's work on rectilinear motion in the 1850's. Over the years the existence and various characterizations of Chebyshev polynomials have been proven by Chebyshev, Erdős and Kolmogorov among others. In this presentation some of these results are extended to the case of weighted Chebyshev polynomials. In particular, the existence of weighted Chebyshev polynomials is established along with a criteria for uniqueness, an alternation theorem, and a characterization of weighted Chebyshev polynomials using Kolmogorov's criteria