

Title: A survey of Crouzeix's Conjecture

Abstract: Crouzeix's 2004 conjecture states that the inequality $\|p(A)\| \leq 2 \|p\|_{W(A)}$ holds for all polynomials p and matrices A , where $\|\cdot\|$ denotes the spectral norm (2-norm) and $\|p\|_{W(A)}$ denotes the maximum modulus of p on the numerical range $W(A)$ of A . The conjecture is known to hold for certain restricted classes of polynomials or matrices. In 2017, Crouzeix and Palencia showed that $\|p(A)\| \leq (1 + \sqrt{2}) \|p\|_{W(A)}$ holds for all polynomials p and matrices A . In this talk, I will survey the progress of this conjecture. We will also discuss the proof of Crouzeix-Palencia's Theorem.