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Självständigt arbete i matematik

Matematiska institutionen

Stockholms universitet

Jonathan Lundborg: Methods of operator theory and majorization theory in the geometry of polynomials

Sammanfattning

It was recently noticed that one can gain substantial new insight into the geometry of polynomials by using methods from operator theory and majorization theory. Such methods were used by Pereira and Malamud to prove three long-standing conjectures of de Bruijn-Springer, Schoenberg and Katsoprinakis that go much beyond the classical Gauss-Lucas theorem. In this paper, we present the solutions to these conjectures and several new relationships between the zeros and critical points of arbitrary complex polynomials.