

THE UNIVERSITY



OF HONG KONG

Institute of Mathematical Research

Department of Mathematics

Geometry Seminar

Matrix differentiators and geometry of polynomials

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Abstract

One of the main challenges in the theory of polynomials is the so-called Sendov conjecture which was first posed by Blagovest Sendov in 1958. This conjecture remains open although attempts to verify this conjecture have led to over 80 papers. The conjecture asserts that for any nonlinear polynomial with all its zeros in the unit disk, there is at least one critical point within unit distance of any given zero. In a recent joint work with Wai-Shun Cheung, a new and elementary method from matrix theory is applied to study the relationship between the critical points and zeros of a polynomial of one complex variable. In particular, we prove some minmax-maxmin inequalities related to Sendov conjecture. Our method can also be used to produce, in an easy and systematic way, a lot of identities relating the sums of powers of critical points to the sums of powers of zeros of a polynomial. This talk will be accessible to undergraduate students.

Date: April 29, 2004 (Thursday)

Time: 4:00 – 5:00pm

Place: Room 517, Meng Wah Complex

All are welcome