POLYNOMIAL NUMERICAL HULLS OF ORDER 3

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Dedicated to Professor Chandler Davis for his outstanding contributions to Mathematics

Abstract. In this note, analytic description of $V^3(A)$ is given for normal matrices of the form $A = A_1 \oplus iA_2$ or $A = A_1 \oplus e^{\frac{2\pi i}{3}}A_2 \oplus e^{\frac{4\pi i}{3}}A_3$, where $A_1, A_2, A_3$ are Hermitian matrices. The new concept “$k^{th}$ roots of a convex set” is used to study the polynomial numerical hulls of order $k$ for normal matrices.

Key words. Polynomial numerical hull, Numerical order, $K^{th}$ roots of a convex set.

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