



Ann. Funct. Anal. 5 (2014), no. 1, 56–62

ANNALS OF FUNCTIONAL ANALYSIS

ISSN: 2008-8752 (electronic)

URL: www.emis.de/journals/AFA/

ESTIMATES FOR THE NUMERICAL RADIUS AND THE SPECTRAL RADIUS OF THE FROBENIUS COMPANION MATRIX AND BOUNDS FOR THE ZEROS OF POLYNOMIALS

AMER ABU-OMAR¹ AND FUAD KITTANEH^{2*}

Dedicated to Professor Tsuyoshi Ando in celebration of his distinguished achievements in Matrix Analysis and Operator Theory

Communicated by M. S. Moslehian

ABSTRACT. We apply numerical radius and spectral radius estimates to the Frobenius companion matrices of monic polynomials to derive new bounds for their zeros and give different proofs of some known bounds.

¹ DEPARTMENT OF BASIC SCIENCES AND MATHEMATICS, PHILADELPHIA UNIVERSITY, AMMAN, JORDAN.

E-mail address: aabuomar@philadelphia.edu.jo

² DEPARTMENT OF MATHEMATICS, UNIVERSITY OF JORDAN, AMMAN, JORDAN.

E-mail address: fkitt@ju.edu.jo

Date: Received: 23 July 2013; Accepted: 9 August 2013.

* Corresponding author.

2010 *Mathematics Subject Classification.* Primary 47A12; Secondary 15A60, 26C10, 30C15.

Key words and phrases. Frobenius companion matrix, zeros of polynomials, numerical radius, spectral radius, inequality.