Pseudospectra in Non Associative Complete Normed Algebras

Abdelaziz Maouche
Department of Mathematics, Faculty of Science, Sultan Qaboos University, Oman

Abstract

The primary focus of this research is to broaden the concept of pseudo spectrum from operators or matrices to elements in a unital complex Banach Jordan algebra-transcending from the associative to the nonassociative setting. We introduce the notion of ϵ-invertibility in a Banach Jordan algebra J, and establish the invariance of pseudospectra in a full subalgebra of J. Furthermore, we investigate the properties of the pseudo-spectrum of an element in a Banach Jordan algebra, we examine level sets of functions and pseudo-spectral bounds. In Section 5, the study extends to linear maps preserving pseudospctrum in Banach Jordan algebras. Section 6 is about the decomposition of some elements of a Banach Jordan algebra into simpler ones in localized subalgebras. Finally, Secion 7 is dedicated to the study of Roch-Silberman theorem in a JB-algebra.

Keywords

Banach Jordan algebra, ϵ-invertibility, pseudospectrum, index of instability, level set function.