

DERIVATIVES OF THE DIAMETER AND THE AREA OF A CONNECTED COMPONENT OF THE PSEUDOSPECTRUM*

GORKA ARMENTIA[†], JUAN-MIGUEL GRACIA[‡], AND FRANCISCO E. VELASCO[‡]

Abstract. The paper concerns the relation between the following two quantities.

- (i) The Hölder condition number of an eigenvalue λ of a square complex matrix.
- (ii) The rate of growth of the diameter and the area of the connected component of the ε -pseudospectrum containing λ .

Key words. Matrices, Pseudospectra, Condition number, Eigenvalues, Derivatives.

AMS subject classifications. 15A12, 15A18, 15A60, 65F35.

*Received by the editors on November 15, 2010. Accepted for publication on September 11, 2011.
Handling Editor: Michael Tsatsomeros. This paper has been written financed by the MTM2010-19356-C02-01 project of the MICINN Spanish Ministry, and the GIC10/169-IT361-10 aid of the Basque Government.

[†]Department of Mathematical Engineering and Computer Science, The Public University of Navarre, Campus de Arrosadía, 31006 Pamplona, Spain (gorka.amentia@unavarra.es).

[‡]Department of Applied Mathematics and Statistics and R.O., The University of the Basque Country, Faculty of Pharmacy, Paseo de la Universidad 7, 01006 Vitoria-Gasteiz, Spain (juanmiguel.gracia@ehu.es, franciscoenrique.velasco@ehu.es).