Electronic Journal of Linear Algebra ISSN 1081-3810
A publication of the International Linear Algebra Society
Volume 15, pp. 143-153, May 2006

ELA
http://math.technion.ac.il/iic/ela

EIGENVALUE CONDITION NUMBERS AND A FORMULA OF BURKE, LEWIS AND OVERTON*

MICHAEL KAROW†

Abstract. In a paper by Burke, Lewis and Overton, a first order expansion has been given for the minimum singular value of $A-zI$, $z \in \mathbb{C}$, about a nonderogatory eigenvalue λ of $A \in \mathbb{C}^{n\times n}$. This note investigates the relationship of the expansion with the Jordan canonical form of A. Furthermore, formulas for the condition number of eigenvalues are derived from the expansion.

Key words. Eigenvalue condition numbers, Jordan canonical form, Singular values.

AMS subject classifications. 15A18, 65F35.

*Received by the editors 11 January 2006. Accepted for publication 25 April 2006. Handling Editor: Michael Neumann.

† Berlin University of Technology, Institute for Mathematics, Straße des 17.Juni 136, D-10623 Berlin, Germany (karow@math.TU-Berlin.de).