
PAULINE VAN DEN DRIESSE, University of Victoria

Refined Inertia of Pattern Matrices

The refined inertia of a real matrix A of order n is an ordered quadruple $(n_+, n_-, n_z, 2n_p)$ of nonnegative integers that sum to n , where n_+, n_- is the number of eigenvalues of A with real part positive, negative, respectively, n_z is the number of zero eigenvalues, and $2n_p$ is the number of nonzero pure imaginary eigenvalues. This concept has application in detecting the possibility of Hopf bifurcation in dynamical systems. Some results on refined inertias of zero-nonzero pattern matrices (matrices with entries 0 or $*$) and of sign pattern matrices (matrices with entries $+, -$ or 0) are given and open problems are stated.