Título:

Autor:

Editorial:

Tema:

Sinopsis

Precio: $1511.00

Año: 2013

Edición: 1ª

ISBN: 9781439888582

Group inverses for singular M-matrices are useful tools not only in matrix analysis, but also in the analysis of stochastic processes, graph theory, electrical networks, and demographic models. Group Inverses of M-Matrices and Their Applications highlights the importance and utility of the group inverses of M-matrices in several application areas.

After introducing sample problems associated with Leslie matrices and stochastic matrices, the authors develop the basic algebraic and spectral properties of the group inverse of a general matrix. They then derive formulas for derivatives of matrix functions and apply the formulas to matrices arising in a demographic setting, including the class of Leslie matrices. With a focus on Markov chains, the text shows how the group inverse of an appropriate M-matrix is used in the perturbation analysis of the stationary distribution vector as well as in the derivation of a bound for the asymptotic convergence rate of the underlying Markov chain. It also illustrates how to use the group inverse to compute and analyze the mean first passage matrix for a Markov chain. The final chapters focus on the Laplacian matrix for an undirected graph and compare approaches for computing the group inverse.

Collecting diverse results into a single volume, this self-contained book emphasizes the connections between problems arising in Markov chains, Perron eigenvalue analysis, and spectral graph theory. It shows how group inverses offer valuable insight into each of these areas.