The Many Aspects of Carl Meyer's Contribution to Group Inverses

Michael Neumann
Department of Mathematics
University of Connecticut
Storrs, CT

ABSTRACT

Beginning with the 1975 paper "The role of the group generalized inverse in the theory of finite Markov chains" and the 1977 paper "Convergent powers of a matrix with applications to iterative methods for singular linear systems", Carl Meyer has made very valuable contributions to core and numerical linear algebra, particularly in connection with Markov chains.

Some of the aspects of Markov chains which Carl's work using the group inverse has covered include: computation of the stationary distribution vector, both in serial and in parallel; error analysis for Markov chains via the development of specialized condition numbers for chains; mean first passage times.

We shall review Carl's important contributions to these fields and try to prove, using our own experience too, that group inverses are an indispensable tool.