

Inverse Positivity of Interval Matrices

Speaker: Prof. K. C Sivakumar (Department of Mathematics, IIT Madras)

Abstract:

Let A, B be real square matrices such that $A \leq B$, where the order is defined entry-wise. Consider the interval $J([A, B]) := \{X : A \leq X \leq B\}$. In general, if A and B are invertible then there may exist $X \in J([A, B])$ which is not invertible. Consider now the case when A and B are invertible and that their inverses are (entry-wise) nonnegative. We ask if each $X \in J([A, B])$ inherits this property that is if each $X \in J([A, B])$ is invertible and its inverse is nonnegative. An answer is given. A similar question is posed for the nonnegativity of the Moore-Penrose inverse. The objective of this talk is to present some recent results in this direction.