1106-15-1240 **Sivaram K Narayan*** (sivaram.narayan@cmich.edu), Department of Mathematics, Central Michigan University, Mount Pleasant, MI 48859. *When Leading Imply All, Mixed Matrices, and Koteljanskii Inequalities.*

An n-by-n real matrix A enjoys the *leading implies all* (LIA) property, if, whenever D is a diagonal matrix such that $A+D$ has positive leading principal minors, then all principal minors of A are positive. Symmetric and Z-matrices are known to have this property. We discuss a new class of matrices called *mixed matrices* that both unifies and generalizes these two classes and their special diagonal equivalences by also having the LIA property. *Nested implies all* (NIA) property is also enjoyed by this new class.

It is natural to ask what other properties of M-matrices and positive definite matrices are enjoyed by mixed matrices as well. We show that mixed P-matrices satisfy a broad family of determinantal inequalities, the Koteljanskii inequalities, previously known for those two classes. In the process, other properties of mixed matrices are developed, and consequences of the Koteljanskii inequalities are given.

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