

1154-15-698

Megan G Wendler* (megan.wendler@wsu.edu), 1134 Markley Drive Apt 5, Pullman, WA 99163. *The almost semimonotone matrices.*

A matrix $A \in \mathbb{R}^{n \times n}$ is (strictly) semimonotone if for every nonzero vector $x \in \mathbb{R}^n$ with nonnegative entries, there is an index k such that $x_k > 0$ and $(Ax)_k$ is nonnegative (positive). A (strictly) semimonotone matrix has the property that every principal submatrix is also (strictly) semimonotone. Thus, it becomes natural to examine the almost (strictly) semimonotone matrices which are those matrices which are not (strictly) semimonotone but whose proper principal submatrices are (strictly) semimonotone. We characterize the 2×2 and 3×3 almost (strictly) semimonotone matrices and describe many of their properties. Then we explore general almost (strictly) semimonotone matrices, including the problem of detection and construction. (Received September 09, 2019)