1056-05-533   **Jonathan Wang*** (`jpwang@fas.harvard.edu`), 52 Adams Mail Center, 26 Plympton St., Cambridge, MA 02138. *Thin Lehman Matrices and Their Graphs.*

Two square $0, 1$ matrices A, B are a pair of Lehman matrices if $AB^T = J + dI$, where J is the matrix of all 1s and d is a positive integer. It is known that there are infinitely many such matrices when $d = 1$, and these matrices are called thin Lehman matrices. An induced subgraph of the Johnson graph may be defined given any Lehman matrix, where the vertices of the graph correspond to rows of the matrix. These graphs are used to study thin Lehman matrices. We show that any connected component of such a graph determines the corresponding rows of the matrix up to permutations of the columns. We also provide a sharp bound on the maximum clique size of such graphs. A complete classification of Lehman matrices whose graphs have at most two connected components is given. (Received September 11, 2009)