1037-05-98 **Gerard Cornuejols*** (gc0v@andrew.cmu.edu), Carnegie Mellon University, Pittsburgh, PA 15213, **Bertrand Guenin** (bguenin@math.uwaterloo.ca), University of Waterloo, and **Levent Tuncel** (ltuncel@math.uwaterloo.ca), University of Waterloo. *Lehman matrices.*

A pair of square $0,1$ matrices A, B such that $AB^T = E + kI$ (where E is the $n \times n$ matrix of all 1s and k is a positive integer) are called *Lehman matrices*. These matrices figure prominently in Lehman's seminal theorem on minimally nonideal matrices. There are two choices of k for which this matrix equation is known to have infinite families of solutions. When $n = k^2 + k + 1$ and $A = B$, we get point-line incidence matrices of finite projective planes, which have been widely studied in the literature. The other case occurs when $k = 1$ and n is arbitrary, but very little is known in this case. This talk discusses this class of Lehman matrices and classifies them according to their similarity to circulant matrices. (Received January 25, 2008)