1067-15-120 **Robert Fraser*** (`rgf11@cwru.edu`), **Michael C Steward**, **Shahla Nasserasr** and **Charles Johnson**. *A Solution to the Inverse Eigenvalue Problem for 3-by-3 Totally Nonnegative Matrices of Class 2.*

A matrix is said to be totally nonnegative of class k if its minors of size no greater than k are all nonnegative. We present a solution to the inverse eigenvalue problem for 3-by-3 totally nonnegative matrices of class 2 (TN_2). In particular, we show that the list $\{\lambda_1, \lambda_2, \lambda_3\}$ is the spectrum of a 3-by-3 TN_2 matrix if and only if $\lambda_2^2 \leq \lambda_1\lambda_2 + \lambda_1\lambda_3 + \lambda_2\lambda_3$. (Received July 25, 2010)