1106-81-2149 **Eric Berry*** (edberry@email.wm.edu), **Dean Katsaros**, **Chi-Kwong Li** and **Diane Pelejo**.

Positive Semidefinite Matrices with Special Block Structure.

Let M_n be the set of $n \times n$ complex matrices. In quantum information science, quantum states are represented as density matrices, i.e., positive semidefinite matrices with trace 1, and quantum operations on quantum states can be identified with positive semidefinite matrices with special structure. In this talk, we will present some recent findings on the eigenvalues of density matrices with maximally mixed reduced states. The collection of such density matrices can be described as

$$S\left(\frac{I_n}{n}\right) = \left\{\rho = (\rho_{ij})_{1\le i,j\le 2} \in M_{2n} : \rho_{11} + \rho_{22} = \frac{I_n}{n}\right\}.$$

Up to a multiple, the matrices in this set corresponds to quantum operations from M_n to M_2. Thus, our results also have implications on quantum operations. (Received September 16, 2014)