1056-60-581   **Santanu Chakraborty*** (`schakraborty@utpa.edu`), Department of Mathematics, University of Texas - Pan American, 1201 West University Drive, Edinburg, TX. *Completely Simple Semigroups of Real d x d Matrices and Recurrent Random Walks.*

The structure of d x d nonnegative idempotent matrices and d x d real idempotent matrices were obtained in Mukherjea's paper about 23 years ago (1986). Then, Mukherjea, also had given the structure of completely simple semigroup of d x d nonnegative matrices around the same time. Recently, we have given a unique structure of real d x d idempotent matrices and used it to obtain the structure of completely simple semigroup of d x d real matrices. In this talk, we describe this structure and also show how this can be used to find the algebraic structure of the set of recurrent states of certain random walks in d x d real matrices. (Received September 13, 2009)