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**Martin Malandro\*** (malandro@shsu.edu), Box 2206, Sam Houston State University, Huntsville, TX 77341-2206. *Inverse semigroup Fourier analysis for partially ranked data*. Preliminary report.

The symmetric group is the group of all  $n \times n$  matrices with exactly one 1 in every row and every column. The rook monoid is the monoid of all  $n \times n$  matrices with *at most* one 1 in every row and every column. In 1989 Persi Diaconis gave an application of Fourier analysis on the symmetric group to the statistical analysis of partially ranked and fully ranked voting data.

We review these notions and extend them to the rook monoid. We explore applications of Fourier analysis on the rook monoid to the analysis of partially ranked data, and we point out the similarities and differences between our approach and Diaconis's. (Received August 23, 2009)