1024-20-22   **Martin Malandro*** (`martin.malandro@dartmouth.edu`) and **Dan Rockmore**. *A Fast Fourier Transform on the Rook Monoid.*

We define a notion of the Fourier Transform for the Rook Monoid (also called the Symmetric Inverse Semigroup) and provide an efficient divide-and-conquer algorithm (Fast Fourier Transform, or FFT) for computing it. This is the first extension of group FFTs to a non-group semigroup. We also discuss potential applications to the analysis of partial ranking data. (Received November 13, 2006)