1099-41-226   **Michael B. Wakin*** (`mwakin@mines.edu`), EECS Department, Colorado School of Mines, 1500 Illinois St., Golden, CO 80401. *Applications of Discrete Prolate Spheroidal Wave Functions in Sparse Recovery Problems.*

The discrete prolate spheroidal wave functions (DPSWFs) and discrete prolate spheroidal sequences (DPSSs) studied by Slepian et al. are remarkable for their time/frequency concentration properties. In this talk we highlight two modern applications of these functions in regularizing ill-posed inverse problems. First, we describe how DPSSs can be used to construct an efficient dictionary for reconstructing samples of sparse analog multiband signals from discrete compressive sensing measurements. Second, we describe how DPSWFs can be used in a new greedy algorithm for super-resolution, where given the low-frequency part of the spectrum of a sequence of impulses, the objective is to estimate their positions. This is joint work with Mark Davenport and Armin Eftekhari. (Received February 09, 2014)