1108-41-515 **Zhihui Zhu** (`zzhu@mines.edu`) and **Michael B. Wakin*** (`mwakin@mines.edu`). *New analysis of multiband modulated DPSS dictionaries.*

Discrete Prolate Spheroidal Sequences (DPSS's) form an efficient basis for sampled bandlimited signals. By modulating and merging the DPSS vectors, one can obtain an efficient dictionary for sampled multiband signals. We show that this dictionary provides a very high approximation not only in an MSE sense for random multiband signals, but also for all sampled sinusoids in the targeted bands. We investigate the spectrum of the corresponding time- and multiband- limiting operator. By analyzing the relationship between the subspaces spanned by the true eigenvectors and by the modulated DPSS vectors, we argue that this multiband modulated DPSS dictionary is indeed approximately the optimal one for representing sampled multiband signals. (Received January 20, 2015)