1056-94-843 **Akram Aldroubi*** (akram.aldroubi@vanderbilt.edu), Dept. of Mathematics, SC1520, Vanderbilt University, Nashville, TN 37240, and **Haichao Wang**. *Compressed sensing via information theoretic methods.*

By considering an s-sparse signal $x \sim (X, P)$ to be an instance of vector random variable $X = (X_1, \ldots, X_n)^t$ We determine a sequence of binary sampling vectors for characterizing the signal x and completely determining it from the samples. Unlike the standard approaches, ours is adaptive and is inspired by ideas from the theory of Huffman codes. The method seeks to minimize the number of steps needed for the sampling and reconstruction of any sparse vector $x \sim (X, P)$. We prove that the expected total cost (number of measurements and reconstruction combined) that we need for an s-sparse vector in $\mathbb{R}^n$ is no more than $s \log n + 2s$. (Received September 17, 2009)