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Vahid Tarokh* (vahid@seas.harvard.edu), 33 Oxford University, Room MD 347, Harvard University–SEAS, Cambridge, MA 02139, and **Maryam Sabbaghian**, **Besma Smida** and **Yongjun Kwak**. *Near Shannon limit low Peak to Average Power Ratio Turbo Block Coded OFDM.*

In this talk, we present an advanced solution for the long standing problem of large peak to average power ratio in orthogonal frequency division multiplexing (OFDM) systems. Although the design of low PAPR codewords has been extensively studied and the existence of asymptotically good codes with low PAPR is also proven, still no code has been constructed to satisfy all requirements. The main goal of this talk is to disclose a coding scheme that not only generates low peak to average power ratio (PAPR) codewords, but it also performs as close as possible to the Shannon limit. We achieve this goal by implementing a time-frequency turbo block coded OFDM. In this two dimensional turbo block code, we design the frequency component to have a tightly bounded PAPR. The time domain component code is designed to obtain good performance while the decoding algorithm has reasonable complexity. Through comparative performance evaluation we show that utilizing the proposed scheme, we achieve considerable improvement in terms of PAPR while we slightly loose the performance compared to other powerful coding methods such as convolutional based turbo codes or low density parity check (LDPC) codes with similar block length. (Received September 20, 2009)