1108-15-554 **Selin Aviyente*** (aviyente@egr.msu.edu), 428 S. Shaw Lane, 2210 Engineering Building, East Lansing, MI 48824, and **Alp Ozdemir** (ozdemira@msu.edu), 428 S. Shaw Lane, 2120 Engineering Building, East Lansing, MI 48824. *Compressive Sensing of Partially Symmetric Tensors.*

Conventional compressed sensing (CS) theory depends on vector type data representation. For higher order datasets such as tensors, applying CS framework requires vectorizing the data. However, using long vectors requires large measurement matrices which lead to high computational complexity. Recently, different methods have been proposed to address the issue of compressed sensing of tensors. For example, Friedland et al. presented serial and parallel recovery procedures for matrices and high order sparse tensors. In this paper, we present a procedure to recover a special case of three-way sparse tensors $\mathcal{X} \in R^{N_1 \times N_2 \times N_3}$ which are symmetric in modes 1 and 2, i.e. partially symmetric tensors with $N_1 = N_2$ from $\mathcal{Y} = \mathcal{X} \times_1 \mathbf{U}_1 \times_2 \mathbf{U}_2 \times_3 \mathbf{U}_3 + \mathcal{E}$, where $\mathcal{E}$ is the noise tensor and $\mathbf{U}_i$s are the measurement matrices. We propose a serial recovery algorithm and show that the approximation error is lower for this algorithm compared to standard sparse recovery for varying sparsity levels and compression rates. (Received January 20, 2015)