1138-92-117 **Jingsai Liang*** (jliang@westminstercollege.edu), Westminster College, 1840 S 1300 E, Salt Lake City, UT 84105, and **Don Hong** (don.hong@mtsu.edu), Middle Tennessee State University, Box 34, Murfreesboro, TN 37132. *Non-Gaussian Penalized PARAFAC Analysis of fMRI Data.*

Independent Component Analysis (ICA) method has been used successfully in fMRI data analysis. As an extension of the ICA, Tensorial Probabilistic ICA (TPICA) is used to decompose fMRI group data into three-mode of subject, temporal, and spatial. But due to the independent constraint of the spatial components, TPICA is not very efficient in the presence of overlapping of active regions of different spatial components. Parallel Factor Analysis (PARAFAC) is another method used to process three-mode data and can be solved by alternating least-squares. PARAFAC may converge into some degenerate solutions if the matrix of one mode is collinear. However, it is reasonable to find significant collinear relationships within subject mode of two similar subjects in group fMRI data. Thus both TPICA and PARAFAC have unavoidable drawbacks. In this presentation, we try to alleviate both overlapping and collinear issues by integrating the characters of PARAFAC and TPICA together, which imposes a non-Gaussian penalty term to each spatial component under the PARAFAC framework. The results of this proposed algorithm outperform TPICA and PARAFAC on the simulation data and real fMRI data. (Received February 08, 2018)