

## DyCA - Dynamical Component Analysis: Theory and Applications

A new multivariate signal decomposition algorithm is presented as an alternative to principal component analysis (PCA), independent component analysis (ICA), and dynamic mode decomposition (DMD). The algorithm aims to obtain a data-driven model of the signal with modes and amplitudes governed by a special set of differential equations. By least squares optimization, the model is obtained through a generalized eigenvalue problem of the correlation matrices of the signal and time-shifted signals. Some results of applications of DyCA to simulated signals and real data - including EEG signals of epileptic seizures - are presented and compared to PCA, ICA and DMD.