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## A robust method for detecting sparse changes in high-dimensional (heteroskedastic) data

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Because of the curse-of-dimensionality, high-dimensional processes present challenges to traditional multivariate statistical process monitoring (SPM) techniques. In addition, the unknown underlying distribution and complicated dependency among variables such as heteroscedasticity increase uncertainty of estimated parameters, and decrease the effectiveness of control charts. In addition, the requirement of sufficient reference samples limits the application of traditional charts in high dimension low sample size scenarios (small n, large p). More difficulties appear when detecting and diagnosing abnormal behaviors that are caused by a small set of variables, i.e., sparse changes. In this talk, I will propose a change-point monitoring method to detect sparse shifts in the mean vector of high-dimensional processes. Examples from manufacturing and finance are used to illustrate the effectiveness of the proposed method in high-dimensional surveillance applications.

## Keywords

Statistical process monitoring (SPM); High-dimensional control chart; Changepoint; Sparse changes; Heteroscedasticity; Moving window

## Special/invited session

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