APPLICATIONS OF ROBUST STATISTICS IN STATISTICAL PROCESS CONTROL

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Abstract

This paper deals with statistical process control problems and the use of influence measures is proposed to monitor multivariate process mean, variability and orientation. Simple analytical expressions are derived for the changes in the mean and the eigenelements of a dispersion matrix that are associated with small change in the underline distribution.The theoretical influence functions and some sample versions of them are proposed as diagnostic tools for the detection of special causes in a manufacturing process. Brief illustrations are provided for measurable and counted data, and possible extensions are underlined.

Keywords: Statistical process control, process parameter, estimator, influence function, eigenvalue, eigenvector, principal component, control chart.