

1056-Z1-683

Katerina G. Tsakiri* (kt125852@albany.edu), Department of Mathematics and Statistics, 1400 Washington Ave., State University of New York at Albany, Albany, NY 12222, and **Igor G.**

Zurbenko. *Effect of noise in Canonical Correlation Analysis with application to Ozone Pollution.*

We analyze the effect of independent noise in canonical variate pairs as well as the principal components of k normally distributed random variables with given covariance matrix. We show that the canonical variate pairs as well as the principal components determined from a joint distribution of original sample affected by noise can be essentially different in comparison with those determined from original sample. However, when the main eigenvalues of the original covariance matrix are all distinguishable, the effect of small noise proved to be negligible. We support the theoretical results by using simulation study and examples. The results of the theory are applicable in any field for the decomposition of the components in multivariate analysis. Application of the theory for studying the ozone problem is provided. (Received September 15, 2009)