

## The new local dependence function of multivariate random vectors

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The local dependence function introduced by Bairamov and Kotz (2000) and further developed by Bairamov et al. (2003) is a bivariate function that characterizes the dependence between two random variables at a particular point. The local dependence function possesses the properties of a dependence measure between two random variables. Furthermore, the value of this local dependence function in a particular point equals Pearson's correlation coefficient, therefore it can also be regarded as a functional generalization of Pearson's correlation coefficient. Since the local dependence function is a bivariate function, it can be used to form the local dependence maps for bivariate random variables which describes the degree of dependence between random variables in the given area. In this work, we extend the Bairamov-Kotz local dependence function to three-variate and multivariate random variables. The definition and properties of the three-variate local dependence function are discussed. Some examples of particular distributions are presented.

### References

1. Bairamov, I. and Kotz S. (2000) On local dependence function for multivariate distributions. *New Trends in Probability and Statistics*. Vol. 5, pp 27-44. T Kollo et al. (Eds) VSP/TEV
2. Bairamov, I., Kotz, S. and Kozubowski, T. J. (2003). A new measure on linear local dependence. *Statistics*, 37(3), 243–258.