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Robust Variogram Fitting Using Non-Linear Rank-Based Estimators

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Abstract : In this paper numerous robust fitting procedures are considered in estimating spatial variograms. In spatial statistics, the conventional variogram fitting procedure (non-linear weighted least squares) suffers from the same outlier problem that has plagued this method from its inception. Even a 3-parameter model, like the variogram, can be adversely affected by a single outlier. This paper uses the Hogg-Type adaptive procedures to select an optimal score function for a rank-based estimator for these non-linear models. Numeric examples and simulation studies will demonstrate the robustness, utility, efficiency, and validity of these estimates.

Keywords : asymptotic relative efficiency, non-linear rank-based, rank estimates, variogram
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