Near-consistent robust estimations of moments for unimodal distributions

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A. Robust Estimations of the Central Moments. In 1976, Bickel and Lehmann (1), in their third paper of the landmark series *Descriptive Statistics for Nonparametric Models*, pointed out that all robust scale estimators at that time could be seen as measures of dispersion of a symmetric distribution around its center of symmetry.

Theorem A.1.

Proof. □

1. PJ Bickel, EL Lehmann, Descriptive statistics for nonparametric models. iii. dispersion in *Selected works of EL Lehmann.* (Springer), pp. 499–518 (2012).