

\mathcal{M} -decomposability and symmetric unimodal densities in one dimension

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Abstract In this paper, we introduce the notion of \mathcal{M} -decomposability of probability density functions in one dimension. Using \mathcal{M} -decomposability, we derive an inequality that applies to all symmetric unimodal densities. Our inequality involves only the standard deviation of the densities concerned. The concept of \mathcal{M} -decomposability can be used as a non-parametric criterion for mode-finding and cluster analysis.

Keywords \mathcal{M} -decomposability · Symmetric unimodal densities · Inequality · Non-parametric criterion for clustering