

# Near-consistent robust estimations of moments for unimodal distributions

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This manuscript was compiled on June 8, 2023

1 **A. Invariant Moments.** All popular robust location estima-  
2 tors, such as the trimmed mean, Winsorized mean, Hodges-  
3 Lehmann estimator, Huber  $M$ -estimator, and median of means,  
4 are symmetric. As shown previously, a  $\gamma$ -weighted Hodges-  
5 Lehmann mean ( $\text{WHLM}_{k,\epsilon,\gamma}$ ) can achieve consistency for the  
6 population mean in any  $\gamma$ -symmetric distribution with a fi-  
7 nite mean. However, it falls considerably short of effectively  
8 handling a broad spectrum of other common distributions.

DRAFT