

# Semiparametric robust mean estimations based on the orderliness of quantile averages

Tuban Lee

This manuscript was compiled on June 5, 2023

1 As one of the most fundamental problems in statistics, the robust loca-  
2 tion estimation has many prominent solutions, such as the symmetric  
3 trimmed mean, symmetric Winsorized mean, Hodges–Lehmann es-  
4 timator, Huber M-estimator, and median of means. Recent studies  
5 suggest that their performance concerning the mean can be quite  
6 different in asymmetric distributions, but the underlying mechanisms  
7 remain largely unclear.

semiparametric | mean-median-mode inequality | asymptotic | unimodal  
| Hodges–Lehmann estimator

DRAFT