

# Sequential Fixed-Precision Estimation: A Review

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## Abstract

The literature on sequential estimation is both very rich and vast [Ghosh, Mukhopadhyay and Sen (1997), *Sequential Estimation*, Wiley: New York; Mukhopadhyay and Solanky (1994), *Multistage Selection and Ranking Procedures*, Dekker: New York; Mukhopadhyay and de Silva (2009), *Sequential Methods and Their Applications*, CRC: Boca Raton]. This area experienced phenomenal growth in the mid 1940's first [Stein (1945), *Annals of Mathematical Statistics*] through 1960's [Chow and Robbins (1965, *Annals of Mathematical Statistics*)] with reference to constructions of fixed-width confidence intervals for the mean. We will point out a number of important turning points in research methods [Robbins (1959, *Probability and Statistics*, H. Cramer volume; Chow and Robbins (1965, *Annals of Mathematical Statistics*); Woodroffe (1977, *Annals of Statistics*)] for both confidence interval and point estimation problems.

In this discourse, we will emphasize concepts of first-order and second-order efficiencies [Mukhopadhyay (1980, *Metrika*); Ghosh and Mukhopadhyay (1980, *Annals of Statistics*); Ghosh and Mukhopadhyay (1981, *Sankhya, Series A*)] approximations for comparing a sequential method with its fixed-sample-size counterpart. In doing so, we intend to show some directions of research which have drawn much attention during the past fifteen to twenty years.

The emphasis will be given to formulations, motivations, and concepts. If time permits, I may give hints of some multivariate sequential estimation problems [e.g., Mukhopadhyay (1974, *Journal of Indian Statistical Association*); Ghosh, Sinha, and Mukhopadhyay (1976, *Journal of Multivariate Analysis*)].

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