# Strong large deviations for arbitrary sequences of random variables

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**Abstract**   We establish strong large deviation results for an arbitrary sequence of random variables under some assumptions on the normalized cumulant generating function. In other words, we give asymptotic expansions for the tail probabilities of the same kind as those obtained by Bahadur and Rao (Ann. Math. Stat. 31:1015–1027, 1960) for the sample mean. We consider both the case where the random variables are absolutely continuous and the case where they are lattice-valued. Our proofs make use of arguments of Chaganty and Sethuraman (Ann. Probab. 21:1671–1690, 1993) who also obtained strong large deviation results and local limit theorems. We illustrate our results with the kernel density estimator, the sample variance, the Wilcoxon signed-rank statistic and the Kendall tau statistic.