Adaptive Allocation for Importance Sampling[*]

Ronald F. Peierls
Brookhaven National Laboratory

and

Joseph A. Yahav
Hebrew University

The problem of estimating optimally a linear combination of means from populations with different and unknown variances is considered. An asymptotically pointwise optimal solution of sequential allocation of the observations is provided.

1. Introduction.

The problem of interest is that of estimating a linear combination of means from several populations. The estimator is the linear combination of the sample means and the question addressed is how to allocate a fixed number of allowed observations between the different populations.

The particular context which motivated this work was Monte Carlo quadrature, where efficiency can be increased by partitioning the integration region and then sampling with different densities in different regions. The cost of each evaluation of the integrand leads to a constraint on the total