Elena Frăţilă

DESPRE EFICIENŢA UNOR PROCEDEE MONTE-CARLO PENTRU CALCULUL INTEGRALELOR

(On the Efficiency of Certain Monte-Carlo Methods for Calculating Integrals)

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In this paper some indications for increasing the efficiency in the case of "importance sampling" proceeding and for the variable control one, are given.

The "importance sampling" proceeding is more efficient than the primitive Monte-Carlo method, if the density of g probability verifies the inequality:

$$g(x) > \frac{k}{2(x-a)}, \quad x \in (a, b),$$

and if f is bounded on $[a, b]$.

The proceeding of control variable is more efficient than the primitive Monte-Carlo method, if:

$$m_1 \int_h^{a_1} (g(u) - 2f(u)\, du + m_2 \int_{a_1}^{b} (g(u) - 2f(u)\, du \leqslant M \int_a^b$$

$(g(u) - (2f(u)\, du$, $g - 2\, f$ keeping a constant sign on $[a, a_1]$, $[a_1\ b]$ intervals and m_1, m_2 being the lower bound of g for these intervals and M the upper bound of the g for $[a, b]$.

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