The multicanonical MC algorithm samples configurations with the weight

$$\mathcal{P}_L^{\mathrm{MC}}(S) \sim e^{(\alpha_L^k + \beta_L^k S)} \quad \text{for } S_L^k < S \leq S_L^{k+1} \qquad (7)$$

instead of sampling with the usual Boltzmann factor $P_L^B(S) \sim \exp(\beta_L^c S)$ corresponding to the canonical ensemble. Here we partitioned the total action interval $0 \leq S \leq 2V$ into $k=0,\ldots,N$ ($N+1$ odd) intervals $I_k = (S_L^k, S_L^{k+1}]$. The idea of the multicanonical MC algorithm is to choose intervals I_k and values of β_L^k and α_L^k at the pseudocritical point β_L^c in such a way that the resulting multicanonical action density $\mathcal{P}_L(S)$ has an approximately flat behavior for values of the action in the interval $[S_L^{1,\max}, S_L^{2,\max}]$; that is to say, configurations dominated by the interface are no longer exponentially suppressed