

## Counting Self-Avoiding Walks: An Open-Loop Algorithm and the Complexity of the Brute-Force Approach

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Received September 23, 2005

**Abstract.** We have investigated the problem of constructing parallel algorithms for counting self-avoiding walks and we present a new algorithm called an Open-Loop Algorithm. We have also worked on the complexity of the brute-force algorithm. In our research we have discovered interesting features of self-avoiding walks and advanced two hypotheses: one about the existence of the  $\kappa$  constant and one about its connection with  $\mu$  (*connective constant*). Also some remarks about programming with OpenMP and Sun's C compiler are made.

**Key words:** self-avoiding walk, SAW, connective constant, brute-force, kappa constant, Open-Loop algorithm, parallel computing, OpenMP