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Mathematical Physics

Probabilistic Turing Machine and Landauer Limit

Marco Frasca

(Submitted on 1 Jun 2012 (v1), last revised 4 Jun 2012 (this version, v2))

We show the equivalence between a probabilistic Turing machine and the time evolution of a one-dimensional Ising model, the Glauber model in one dimension, equilibrium positions representing the results of computations of the Turing machine. This equivalence permits to map a physical system on a computational system providing in this way an evaluation of the entropy at the end of computation. The result agrees with Landauer limit.

Comments:	3 pages. Added a reference
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