

Algorithms from Physics

Dr. Nisheeth Vishnoi

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Abstract

In understanding physical systems over hundreds of years, Physicists have developed a wealth of dynamics and viewpoints. Some of these methods, when abstracted appropriately, could lead to new algorithmic techniques with applications to machine learning and TCS. I will present a couple of recent examples from my own research on such interactions between Physics and Algorithms – a Hamiltonian Dynamics inspired algorithm for sampling from continuous distributions and a Boltzmann’s equation based algorithm for estimating the partition function for discrete distributions.