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## Applications of Jarzynski's theorem in lattice gauge theories

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In lattice gauge theories many physical quantities, such as the pressure at finite temperature and zero baryon chemical potential in QCD, can be directly related to the computation of free energy differences.

Jarzynski's theorem is a well-known equality in statistical mechanics

which puts in relation the free energy difference between two equilibrium states with the fluctuations of the work performed during non-equilibrium transformations between these two states.

In this talk an extension to lattice gauge theory of algorithms based on this relation is presented, along with numerical results for the interface in the

$Z_2$  gauge theory in three dimensions and for the equation of state for the non-Abelian SU(2) gauge theory.

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