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Updates on the density of states method in finite temperature Symplectic gauge theories

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First order phase transitions in the early universe have rich phenomenological implications, such as the production of potentially detectable background gravitational waves. Density of states methods, and in particular the linear logarithmic relaxation method, can be used to resolve issues related to the meta-stable dynamics around the critical point and allow for the accurate determination of the thermodynamic observables that are otherwise inaccessible, such as the free energy. In this contribution, we present an update on results for the analysis of the finite temperature deconfinement phase transition in a pure Sp(4) gauge theory, a model for physics beyond the standard model, using the LLR method. We present an analysis of the properties of the transition in the thermodynamic limit.

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