Numerical exploration of statistical physics

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Stellingen

Behorende bij het proefschrift

Numerical Exploration of Statistical Physics

1. Integrable theories can have operators that thermalize.

   [*Chapter 2*]

2. Multiple matter fields gauged with the same Z_2 field exhibit "registry" order parameter in the Higgs phase.

   [*Chapter 3*]

3. Entanglement entropy of the lattice gauge theories with matter fields at criticality does not grow with the number of additional matter fields.

   [*Chapter 4*]

4. Initialization along the edge of chaos is a necessary but not sufficient condition for optimal trainability.

   [*Chapter 5*]

5. Generative models can be used to improve calculation of entanglement entropy in lattice gauge field models.

   M. Medvidovic, J. Carrasquilla, L. E. Hayward, B. Kulchytskyy, *Generative models for sampling of lattice field theories* arXiv:cond-mat/2012.01442

6. The recent development of machine learning techniques can significantly improve our current optimization algorithms. But caution must be applied and methods understood rather than mindlessly used.

7. Advancements in computational physics would be vastly accelerated by making codes of research papers publicly available.

8. The accuracy of the ground-state energy is not sufficient evidence of the proper representation of a ground state in gapless systems.

9. Considering machine learning beyond being merely a profoundly intricate minimization challenge is fruitless.

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