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Loop gas formulation of supersymmetric quantum mechanics

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We discuss the formulation of supersymmetric quantum mechanics on the lattice as an interacting gas of bosonic and fermionic loops and its simulation using the Prokof'ev-Svistunov worm algorithm. In the case of unbroken supersymmetry we can simulate different lattice discretisations, including Q-exact actions, in the weak and strong coupling regime, and we find that the expected mass degeneracy between the bosonic and fermionic sector is reproduced with very high precision. Further, we also address the case of broken supersymmetry and discuss implications and consequences for the simulation with the worm algorithm.

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talk

Primary author: BAUMGARTNER, David (University of Bern)

Co-author: Prof. WENGER, Urs (University of Bern)

Presenter: BAUMGARTNER, David (University of Bern)

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