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Sign-blessed thermodynamics of interacting fermions

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I will review several key features associated with the conventional sign problem and argue that for regular interacting fermionic systems none of them applies if the calculation is done with the help of Feynman diagrams. The diagrammatic approach generically solves the computational complexity problem and can be used for obtaining numerical solutions for interacting fermions. I will illustrate the concept with results for the Fermi-Hubbard and Coulomb gas models and explain why this method is not the "death of theoretical physics".

Author: PROKOFIEV, Nikolay (University of Massachusetts Amherst)

Presenter: PROKOFIEV, Nikolay (University of Massachusetts Amherst)

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