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Sign problem and the tempered Lefschetz thimble method

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The tempered Lefschetz thimble method (TLTM) [arXiv:1703.00861] is a parallel-tempering algorithm towards solving the numerical sign problem. It uses the flow time of the antiholomorphic gradient flow as a tempering parameter and is expected to tame both the sign and multimodal problems simultaneously. In this talk, after reviewing the TLTM, we apply the method to various problems, including the quantum Monte Carlo simulation of the Hubbard model away from half-filling and the chiral random matrix models with finite temperature and finite chemical potential.

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Session Classification: Invited talks