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The relationship between Hirsch-Fye and weak coupling diagrammatic Quantum Monte Carlo methods KARLIS MIKELSONS, ALEXANDRU MACRIDIN, University Of Cincinnati, MARK JARRELL, Louisiana State University — Two weak coupling Continuous Time Quantum Monte Carlo (CTQMC) methods are shown to be equivalent for Hubbard-like interactions. A relation between these CTQMC methods and the Hirsch-Fye Quantum Monte Carlo (HFQMC) method is established, identifying the latter as an approximation within CTQMC and providing a diagrammatic interpretation of HFQMC. Both HFQMC and CTQMC are shown to be equivalent when the number of time slices in HFQMC becomes infinite, implying the same degree of fermion sign problem in this limit.

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