Time-Dependent Superfluids on Heterogeneous Computing Platforms KENNETH ROCHE, Pacific Northwest National laboratory and University of Washington — The superfluid local density approximation (SLDA) and its time-dependent extension (TDSLDA) can be used to study strongly interacting fermion systems. SLDA and TDSLDA have been verified, and validated theoretically and experimentally for both homogeneous and inhomogeneous systems. Our numerical implementation enabled the first time-dependent simulations of fermionic superfluid systems within the DFT approach. Recently, we have developed novel algorithms for the efficient evaluation of the theory using hybrid CPU-GPU computer architectures. In this talk, I will focus on the challenges and implementation details of the hybrid CPU-GPU time-dependent code.

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