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Critical Temperature and Thermodynamic Properties of Attractive Fermions EVGENI BUROVSKI, NIKOLAY PROKOF'EV, BORIS SVISTUNOV, University of Massachusetts, Amherst, MATTHIAS TROYER, ETH, Zurich — The unitarity regime of the BCS-BEC crossover can be realized by diluting a system of two-component lattice fermions with an on-site attractive interaction. We perform a systematic-error- free finite-temperature simulations of this system by diagrammatic determinant Monte Carlo. We report the data obtained on the Cray X1E "Phoenix" of the Oak Ridge National Laboratory. The critical temperature in units of Fermi energy is found to be $T_c/E_F = 0.152(7)$. We also report the behaviour of the thermodynamic functions, and discuss the issues of thermomentry of ultracold Fermi gases.

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