

expression for F , one obtains the free energy density $\mathcal{F} = F$ in eq. (106).

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- [1] K. M. O'Hara et. al., *Science* **298** (2002) 2179.
 - [2] J. Kinast et. al. *Science* **298** (2002) 2179.
 - [3] A. J. Leggett, in *Modern Trends in the Theory of Condensed Matter*, Springer, Berlin 1980.
 - [4] P. Nozières and S. Schmitt-Rink, *J. Low Temp. Phys.* **59** (1985) 195.
 - [5] T.-L. Ho, *Universal Thermodynamics of Degenerate Quantum Gases in the Unitary Limit*, *Phys. Rev. Lett.* **92** (2004) 090402 [arXiv:cond-mat/0309109].
 - [6] T.-L. Ho and E. Mueller, *High temperature expansion applied to fermions near a Feshbach resonance*, *Phys.Rev.Lett.* **92** (2004) 160404 [arXiv:cond-mat/0306187].
 - [7] Y. Ohashi and A. Griffin, *The BCS-BEC Crossover in a Gas of Fermi Atoms with a Feshbach Resonance*, *Phys. Rev. Lett.* **89** (2002) 130402 [arXiv:cond-mat/0210185].
 - [8] Astrakharchik, J. Boronat, J. Casulleras and S. Giorgini, *Equation of state of a Fermi gas in the BEC-BCS crossover: a quantum Monte Carlo study*, *Phys. Rev. Lett.* **93** (2004) 200404 [arXiv:cond-mat/0406113].
 - [9] E. B. Kolomeisky and J. P. Straley, *Renormalization-group analysis of the ground-state properties of dilute bose systems in d spatial dimenions*, *Phys. Rev.* **B46** (1992) 11749.
 - [10] Z. Nussinov and S. Nussinov, *The BCS-BEC Crossover in Arbitrary Dimensions*, [arXiv:cond-mat/0609106].
 - [11] A. Bulgac, J. E. Drut and P. Magierski, *Spin 1/2 Fermions in the Unitary Regime: A Superfluid of a New Type*, *Phys. Rev. Lett.* **96** (2006) 090404 [arXiv:cond-mat/050537].
 - [12] D. Lee, *Ground state energy of spin 1/2 fermions in the unitary limit*, *Phys. Rev.* **B73** (2006) 115112 [arXiv:cond-mat/0511332].