

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Finite-Temperature Constraint-Pairing Mean Field Theory¹

JIANMIN TAO, GUSTAVO SCUSERIA, Rice University — Recently Tsuchimochi and Scuseria have developed a constrained-pairing mean-field theory (CPMFT), based on the Hartree-Fock-Bogoliubov theory. Application to molecular systems shows that CPMFT can accurately describe the binding energy curve in the dissociation of molecules, where electron correlation is strong. However, because CPMFT is a zero-temperature theory, it is not suitable for the description of high-temperature superconductivity and normal state of high-temperature superconductors. Here a finite-temperature generalization is formulated for the thermodynamic state of quantum many-body systems.

¹This work was supported by NSF under Grant No. CHE-0807194 and the Welch Foundation under Grant No. C-0036.

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Date submitted: 18 Nov 2010

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