

Gap Equations and Effective Potentials at Finite Temperature and Chemical Potential in D-Dimensional Four-Fermion Models

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Abstract: We have proven the general relations between the gap equations obeyed by dynamical fermion mass and the corresponding effective potentials at finite temperature and chemical potential in D-dimensional four-fermion interaction models. This gives an easy approach to get effective potentials directly from the gap equations. We find out explicit expressions for the effective potentials at zero temperature in the cases of $D=2,3$, and 4 for practical use.

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Key words: four-fermion model, thermal field theory, gap equation, effective potential

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