

Explicit Proof of Equivalence of Two-Point Functions in the Two Formalisms of Thermal Field Theory

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(Received: 2001-6-25; Revised:)

Abstract: We give an explicit proof of equivalence of the two-point function to one-loop order in the two formalisms of thermal $\lambda\phi^3$ theory based on the expressions in the real-time formalism and indicate that the key point of completing the proof is to separate carefully the imaginary part of the zero-temperature loop integral from relevant expressions and this fact will certainly be very useful for examination of the equivalent problem of two formalisms of thermal field theory in other theories, including the one of the propagators for scalar bound states in an NJL model.

PACS: 11.10.Wx, 11.10.-z, 03.70.+k

Key words: two-point function, thermal field theory, equivalence of the imaginary-time and real-time formalisms, imaginary part of zero-temperature loop

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