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数值模拟计算假真空衰变率的新方案

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We propose a novel approach to calculate the false vacuum decay rate, which goes beyond the saddle-point approximation when large thermal fluctuations appear. Utilizing the extension of the Wigner function in quantum field theory, we numerically calculate the decay rate of the false vacuum through functional integral. We observe that the decay rate for the thermal fluctuation scenarios and its dependence on the potential shape, and found that the false vacuum decay occurs following an exponentially decay rate, and the speed of vacuum decay decreases when the initial energy of the system decreases and the potential height increase.

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