Effect of Parabolic Potential on Bipolaron

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(Received: 2004-2-23; Revised: 2004-4-15)

Abstract: We apply a Feynman path-integral variational approach combining with the average for the relative motion to study the stability of bipolaron in a quantum dot. The binding energy is calculated in different parameters. We find that an optimum quantum potential favors the formation of bipolaron. Compared with other methods in literature, the present approach is better than Laudau-Pekar one in all coupling regime and full path-integral one in the strong coupling regime.

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