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Stability of Quasi-Two-Dimensional Bipolarons

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Abstract: The stability criteria of quasi-two-dimensional dimensional bipolarons have been studied within the framework of strong coupling and path-integral theories. It is shown that the critical values of the electron-phonon coupling constant (α), and the ratio of dielectric constants ($\eta = \varepsilon_{\infty}/\varepsilon_0$) exhibit some non-trivial features as the effective dimensionality is tuned from three to two.