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Confined Bipolarons in the Strong Coupling Limit

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Abstract: Within the framework of the strong-coupling polaron theory and the bulk phonon approximation we report the possibility and criteria in achieving stable bipolaron states in confined media. We use a simple model of two electrons constrained within an anisotropic three dimensional parabolic potential box of tunable barrier slopes. Conforming the confining potential from one geometry to the other, we obtain an explicit tracking of the stability criteria as a function of the degree of confinement uncovering all low dimensional major geometric configurations of common interest.

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