

## Self-action of a point charge in a wormhole space-time

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### Abstract

We consider the self-energy and the self-force for an electrically charged particle at rest in the wormhole space-time. We develop a general approach to finding the self-force and apply it to the two specific profiles of the wormhole throat with singular and with smooth curvature. The self-force for these two profiles is found in manifest form; it turns out to be an attractive force. We also find an expression for the self-force in the case of arbitrary symmetric throat profile. Far from the throat the self-force is always attractive. © 2007 The American Physical Society.

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