



Central Configurations in the Five-Body Problem: Rhombus Plus One

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Abstract

We show the existence of central configurations in the planar five-body problem where four bodies are located at the vertices of a rhombus, called rhombus plus one central configurations. Concretely we prove analytically their existence when one diagonal is nearly equal to the sides of the rhombus and when the two diagonals are either equal or nearly equal. In addition, we prove that given a rhombus plus one configuration, the corresponding vector of positive masses that makes the configuration central, if exists, is unique.

Keywords Five-body problem · Central configuration · Rhombus configuration · Square configuration

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