

On the Existence of Central Configurations of p Nested n -gons

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Abstract In this paper we prove the existence of central configurations of the pn -body problem where the masses are at the vertices of p nested regular n -gons with a common center for all $p \geq 2$ and $n \geq 2$. In such configurations all the masses on the same n -gon are equal, but masses on different n -gons could be different.

Keywords Planar central configurations · Nested regular n -gons

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1 Introduction

We consider the planar N -body problem

$$m_k \ddot{\mathbf{q}}_k = - \sum_{j=1, j \neq k}^N G m_k m_j \frac{\mathbf{q}_k - \mathbf{q}_j}{|\mathbf{q}_k - \mathbf{q}_j|^3}, \quad k = 1, \dots, N,$$

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