

A family of stacked central configurations in the planar five-body problem

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Abstract We study planar central configurations of the five-body problem where three bodies, m_1 , m_2 and m_3 , are collinear and ordered from left to right, while the other two, m_4 and m_5 , are placed symmetrically with respect to the line containing the three collinear bodies. We prove that when the collinear bodies form an Euler central configuration of the three-body problem with $m_1 = m_3$, there exists a new family, missed by Gidea and Llibre (Celest Mech Dyn Astron 106:89–107, 2010), of stacked five-body central configuration where the segments m_4m_5 and m_1m_3 do not intersect.

Keywords Planar five-body problem · Central configurations · Stacked central configurations

1 Introduction

A configuration of the n -body problem is called *central* if the acceleration vector of every body is proportional (common scalar) to its position vector (with respect to the center of

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