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A Special Family of Stacked Central Configurations: Lagrange Plus Euler in One

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Abstract We show the existence of a family of stacked central configurations in the planar five-body problem with a special property. Three bodies m_1, m_2 and m_3, ordered from left to right, are collinear and form an Euler central configuration, and the other two bodies m_4 and m_5, together with m_2 are at the vertices of an equilateral triangle and form a Lagrange central configuration.

Keywords Collinear central configurations · Equilateral central configuration · Laura-Andoyer equations

1 Introduction and Main Result

Central configurations play an interesting role in celestial mechanics [18]. For instance, they allow to obtain explicit solutions of the n-body problem where the initial shape of the configuration is preserved along the orbit up to rescaling and rotations.

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