Double-Antiprism Central Configurations of the 3*n*-Body Problem

Montserrat Corbera · Jaume Llibre

Received: 15 February 2012 / Accepted: 10 April 2012 / Published online: 5 May 2012 © Springer Basel AG 2012

Abstract In this paper we study numerically a new type of central configurations of the 3*n*-body problem with equal masses which consist of three *n*-gons contained in three planes z = 0 and $z = \pm \beta \neq 0$. The *n*-gon on z = 0 is scaled by a factor α and it is rotated by an angle of π/n with respect to the ones on $z = \pm \beta$. In this kind of configurations, the masses on the planes z = 0 and $z = \beta$ are at the vertices of an antiprism with bases of different size. The same occurs with the masses on z = 0and $z = -\beta$. We call this kind of central configurations *double-antiprism central configurations*. We will show the existence of central configurations of this type.

Keywords Spatial central configurations \cdot 3*n*-body problem \cdot Double-antiprism central configurations

Mathematics Subject Classification Primary 70F10; Secondary 70F15

M. Corbera (🖂)

Departament de Tecnologies Digitals i de la Informació,, Universitat de Vic, c/. Laura 13, 08500 Vic, Barcelona, Catalonia, Spain e-mail: montserrat.corbera@uvic.cat

J. Llibre

Departament de Matemàtiques, Universitat Autónoma de Barcelona, 08193 Bellaterra, Barcelona, Catalonia, Spain e-mail: jllibre@mat.uab.cat

