

G. Beltritti F. Mazzone, M. Oviedo
Dpto de Matemática
Facultad de Ciencias Exactas, Físico-Químicas y Naturales
Universidad Nacional de Río Cuarto
Ruta 36, Km 601
X5804BYA-Río Cuarto
Argentina

February 7, 2018

Dear Editors,
Celestial Mechanics and Dynamical Astronomy

We submit a revised version of our manuscript previously entitled "A generalized Sitnikov problem". Currently, at the suggestion of the commentators, the title of the article is "The Sitnikov problem for several primary bodies configuration".

As the editors suggest, we marked with red the changes made in the paper. Except one sentence that has been deleted from page 6: "Hereafter, we say that q_1, \dots, q_n is a collisionless configuration when $q_i \neq 0$ for $i = 1, \dots, n$. We note that despite of this fact the system can have collisions; for example, when the primaries have a homothetic collapsing motion."

Next we respond to the questions raised by the reviewers and list the changes introduced.

Answers reviewer 1:

- 1) We introduce a square symbol to indicate the end of proofs.
- 2) We expand more broadly on the question and introduce a reference justifying the statement commented by the reviewer. In order to give more clarity to what was indicated by the reviewer, we also introduced a set \mathcal{O} for indicate the domain of solutions when they are not defined in all time and we replaced in several places the phrase "for every t " by "for every t in \mathcal{O} ".
- 3) In the introduction we add brief comments on the techniques used.
- 4) We add information about what we consider are the main novelties contributed by the article and the research lines that are opened from it.

Answers reviewer 2:

- 1) We changed the title to a more specific one.
- 2) We add a reference and a brief explanation that justifies our affirmation.
- 3) We changed "balanced" by "admissible".
- 4) We omit the invocation to the concept of "collisionless". Instead, we incorporate the condition $q_i \neq 0$ in definition 2. This does not change the results obtained in the article at all. It was only necessary to eliminate the word "collisionless" every time it appeared in the text.
- 5) We think that no change should be made. We agree with the reviewer, any masses in an equilateral triangle form a central configuration, but the condition of admissibility is satisfied only if the masses are equal.

6) We rewrite the definition 4.

7) We use the computer as a calculator to check the validity of an inequality in a finite number of cases. This is rigorous since the differences obtained between the sides of the inequality were higher order than the typical rounding errors in the operations carried out. Note that for the rest of the cases, which are infinite, the inequality is proven by a mathematical reasoning. We think that it is not necessary to modify the article, however if in the opinion of the editors this should be done with pleasure we will do it.

8) We rewrite the theorem 7.

9) We clarify this point.

10) See the response to the Editor-in-Chief.

Answers Editor-in-Chief:

Unfortunately, we are not familiar enough with any native English-speaking mathematician we may ask you to review our article. We have consulted another person for whom English is a second language. We hope that most of the problems are solved.

Sincerely,

Fernando Mazzone