"III Congreso Latinoamericano de Astrobiología (2021)"
Revista Mexicana de Astronomía y Astrofísica Serie de Conferencias (RMxAC), **55**, 96–96 (2023)

https://doi.org/10.22201/ia.14052059p.2023.55.32

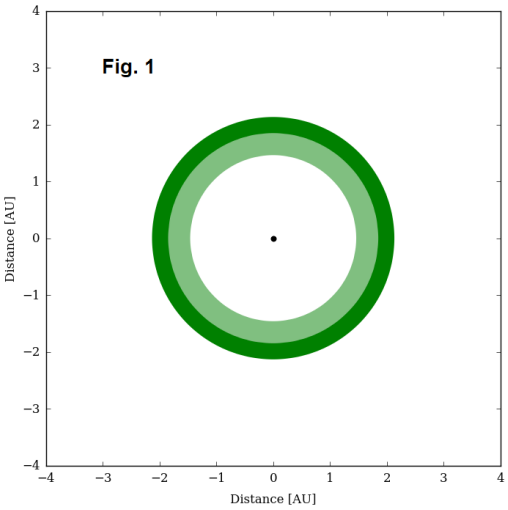
FORMATION OF SUPERHABITABLE WORLDS IN THE HABITABLE ZONE OF ORANGE DWARF STARS

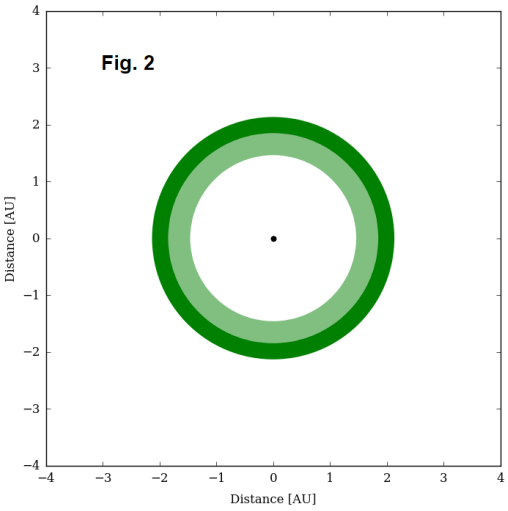
F. M. A. Silva[1] and B. L. do Nascimento-Dias[2]

The objective of this project is to carry out an analysis of planetary systems that orbit orange dwarf stars through computational modeling and build a database with possible candidates for terrestrial exoplanets in the habitability zone of these systems.

The detection rate of new exoplanets grows exponentially over time due to technological development. That's why it's important to have computational tools that optimize the work of analyzing exoplanet systems, in order to generate information that can contribute to the subject. A very important point to note is that the orange dwarf stars are favorable stars for superhabitable planets (Heller et al. 2014).

The planetary systems Gliese 892 and HD 40307, discovered by radial velocity technique, were chosen and analyzed through their planetary transits. Then, using the data provided about the systems, such as luminosity, temperature and mass of the orange dwarf stars, and using the website Habitable Zones in Multiple Star Systems (http://astro.twam.info/hz/), it was possible to generate graphics representative of the habitability zone for both targets. This is depicted in Fig. 1 for Gliese 892 and Fig. 2 for HD 40307. Finally, planetary systems discovered by radial velocity that haven't yet been detected terrestrial exoplanets will be chosen and used in the REBOUND software, which will aim to discover terrestrial exoplanets that are in the habitable zone of these selected planetary systems (Chambers et al. 2001).





REFERENCES

Heller R. & Armstrong, J. 2014, AstBio, 14, 50
Chambers, J. E. 2001, Icar, 152, 205

[1]Federal University of Rio de Janeiro (Francielle19@astro.ufrj.br).
[2]Federal University of Juiz de Fora.