

XXII Brazilian Colloquium
on Orbital Dynamics,
2 - 6 December, 2024

CBDO



Ilustração: New Horizons - Plutão - Caronte / NASA

**Program and
Book of Abstracts**



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CBDO 175

Particle regions around Quaoar system

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(50000) Quaoar is a trans-Neptunian object candidate for a dwarf planet. With 1100 km in diameter, eccentricity of 0.04 and mass of 1.2×10^{21} kg, it orbits at an average distance of 43.4 au from the Sun. Quaoar has a 90 km diameter satellite named Weywot that orbits at 13300 km from its center and the recently discovered system composed of two rings that are surprisingly outside the Roche limit. Using the Rebound program, we adapted a routine to simulate sets of particles around Quaoar taking into account its non-sphericity, the influence of solar radiation pressure and the presence of the satellite Weywot. Preliminary results show that initially stable 20 micron particles escape due to the increase in eccentricity caused by solar radiation pressure. Furthermore, when the J2 of Quaoar is considered, it appears strong enough to dampen the effect of radiation pressure, causing part of the previously ejected particles to survive and/or collide with Weywot.

Acknowledgments

This study was financed in part by the Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES), in the scope of the Program CAPES-PrInt, process number 88887.310463/2018-00, International Cooperation Project number 3266, Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) - Proc. 2016/24561-0 and by the DFG German Research Foundation (project 446102036).

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