

## List of abstracts accepted for CBDO 2024 in order of submission, October 10, 2024.

### CBDO 001

The Orbital Eccentricities of Directly Imaged Companions Using Observable-based Priors: Implications for Population-level Distributions

Clarissa R. Do Ó, Kelly K. O'Neil, Quinn M. Konopacky, Tuan Do, Gregory D. Martinez, Jean-Baptiste Ruffio, and Andrea M. Ghez

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Oral communication

### CBDO 002

The co-orbital dynamics in binary systems

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Oral communication

### CBDO 003

ALR\_Sim\_tracks - trajectory simulator software to assist the search for favourable trajectories for the exploration of the triple Asteroid 2001-SN263 from the Laser Altimeter point of view

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Poster

### CBDO 004

Capture trajectories for NEAs using three-body dynamics

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Poster

### CBDO 005 - A

Dimensioning and design (2D and 3D) of the laser altimeter for the ASTER Mission

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Poster

### CBDO 006 - A

Vision Transformers for identifying asteroids interacting with secular resonances

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#### CBDO 007

Understanding and describing a phase transition from limited to unlimited diffusion for a billiard system

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Poster

#### CBDO 008 - A

The five largest satellites of Uranus: astrometric observations spread over 29 years at the Pico dos Dias Observatory

Camargo, J.I.B. (1), Veiga, C.H. (1), Vieira-Martins, R. (1), Fienga, A. (2), Assafin, M. (3)

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Poster

#### CBDO 009 - A

Preliminary Design of Trajectories for Rendezvous with 2001 SN263

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#### CBDO 010

The geomagnetic field and charge generation for satellites

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Poster

#### CBDO 011

Rendezvous formalism applied into final stage correction maneuverings of LEO-DRO Cislunar Transfer

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#### CBDO 012

Numerical validation of electric charging from current induced by the geomagnetic field

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Poster

#### CBDO 013 - A

Low-energy trajectories generated in the Earth-Moon system destined to the Jovian system  
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Poster

#### CBDO 014

A Magnetotorque Model with External Coils for CubeSat Attitude Control  
Yan da Silva Moura, Helton da Silva Gaspar  
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Poster

#### CBDO 015

Characterization of the Rings of the Centaur Chariklo  
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Poster

#### CBDO 016

Orbital Precision of Himalia through Numerical Integrations and Statistical Analysis of Observations  
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Poster

#### CBDO 017

Light Deflection in Stellar Occultations: A Challenge for Astrometry  
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CBDO 018

Qualitative analysis of the dynamic evolution of planetary systems

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Poster

CBDO 019

The effect of impactor mass-ratio in the accretion of Uranus and Neptune

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Poster

CBDO 020 - A

Orbital dynamics of space debris considering natural perturbations and resonance effects

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CBDO 021

Machine Learning Applied to Asteroid Study in the LSST Era

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CBDO 022

Searching for long lasting natural orbits around moons in the Solar System

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CBDO 023

An analytical model for the dynamical evolution of two-planet extrasolar systems in wide binaries stars

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CBDO 024 - A

Orbital Stability of Small Satellites in Trans-Neptunian Dwarf Planet Systems

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Poster

CBDO 025

Analytical Modeling of the Gravitational Potential of Irregularly Shaped Celestial Bodies considering three distinct internal structures: Application to (21) Lutetia

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Poster

CBDO 026

Analytical Modeling of the Gravitational Potential of Irregularly Shaped Celestial Bodies: Application to (285263) 1998 QE2

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CBDO 027

Investigation of orbits around the asteroid (16) Psyche

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CBDO 028 - A

Energy Variation of Space Debris considering Orbital Maneuvers and Ground-Based Laser

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Poster

CBDO 029

Stellar Occultations observed by the CHEOPS Space Telescope

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#### CBDO 030

Estimation of Orbital Errors of Space Telescopes

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Poster

#### CBDO 031 - A

A study on the chaotic dynamics of comet 1P Halley

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Poster

#### CBDO 032

OGLE-2019-BLG-1470L AB c Exoplanet Orbital Dynamics Analysis

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#### CBDO 033

Tridimensional Dynamics of Small Satellites

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#### CBDO 034

Comparison of aerodynamic control algorithms for satellites in LEO to increase its orbital decay

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Poster

CBDO 035

Non-transiting exoplanet characterization using TTV pattern and Deep Learning

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Oral communication

CBDO 036

Analysis and two-dimensional modelling of diffraction effects in stellar occultations

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CBDO 037

Prediction of Gravitational Microlensing

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CBDO 038

Stellar Occultations by the Trojan (2363) Cebriones

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CBDO 039 - A

The Effect of Triton's Evolution on Neptune's Spin Axis

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Oral communication

CBDO 040

Impact of Insertion Errors on the Performance of Small Satellite Constellations

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CBDO 041

Aster Project: A New Launch Window with Multiple Swing-bys and Technological Parameters

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CBDO 042 - A

On the Dynamics around Quaoar: its shape and the unstable limit

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CBDO 043

Analysis of interplanetary missions involving gravity-assisted maneuvers with the moon and the use of photonic solar sails

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CBDO 044 - A

Isochronous Bifurcations

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CBDO 045 - A

Long and short-duration orbits around the Moon for different types of missions

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Oral communication

CBDO 046 - A

Heliotropic Orbits around the 65803 Didymos Binary Asteroid System: Effects of Zonal Harmonics, Solar Radiation Pressure, and Third-Body Perturbations



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Poster

CBDO 047 - A

The Tesseral Resonance 3:1 in the Jacobi Ellipsoid

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Poster

CBDO 048 - A

Double lunar swing-by from periodic orbits in the restricted four-body problem

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Poster

CBDO 049

Analysing the dynamics of Kepler-90 planetary system

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CBDO 050 - A

Design of a Frozen Orbit for GARATÉA-L mission

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Poster

CBDO 051 - A

Semi-Analytical Theory for a Lunar Probe Orbit

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Poster

#### CBDO 052

Analysis of the asteroid Phereclos from stellar occultations

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Poster

#### CBDO 053 - A

Multi-objective optimization applied to a satellite constellation for the BiomeSat mission

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Poster

#### CBDO 054 - A

Study of a satellite constellation for INPE's BiomeSat mission

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#### CBDO 055 - A

Retrograde Symmetrical Periodic Orbits in the Circular Restricted 3-body Problem

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Poster

#### CBDO 056 - A

Use of a Rational Agent to determine the attitude of a Solar Sail

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#### CBDO 057

Orbital analysis of the Kiruna Meteor (2023/2/27)

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CBDO 058

The Moon as a possible source of Earth's co-orbital bodies  
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CBDO 059

Application of Orbital Correction Maneuvers by Continuous Thrust in Frozen Orbits Around Venus  
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Poster

CBDO 060

Optimizing Hyperparameters in a Convolutional Neural Network Model for Image Analysis  
Isadora R. C. Silva, Joao P. I. Gosmin, Rita C. Domingos, Ivan A. A. Garde  
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Poster

CBDO 061 - A

A numerical analysis of planar colliding binary companions  
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CBDO 062

Monitoring the movement of small celestial bodies at FESJ/UNESP Station.  
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Poster

CBDO 063

Genetic Algorithm Simulation of Mitigation Maneuver Spacecraft-Asteroid Bennu and Yarkovsky Effect

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Poster

CBDO 064

Dynamical evolution of a system composed by extended deformable bodies with complex rheologies

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Oral communication

CBDO 065

Island myriads in periodic potentials

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Poster

CBDO 066 - A

Deep Learning Identification of Asteroids Interacting with  $g - s$  Secular Resonances

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Poster

CBDO 067 - A

Surface Properties of the Jovian Trojan (58931) Palmys

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CBDO 068

Dynamical structure of compact planetary systems

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Poster

CBDO 069

Multi-fluid hydrodynamical simulations of circumbinary planet formation via pebble accretion

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Poster

CBDO 070

Machine learning approach for mapping stability regions around planetary systems

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Poster

CBDO 071 - A

A semi-analytical approach to retrograde mean motion resonances

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Poster

CBDO 072

Numerical Analysis of CubeSat Orbit Using Aerodynamic Perturbative Forces and Debris Monitoring in Low Earth Orbit

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Poster

CBDO 073 - A

Resonant interactions between objects on counter-revolving orbits

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Oral communication

CBDO 074

Innovative Approaches in Nanosatellite and Tether Systems for Cost-Effective Space Missions

Fabio Augusto da Silva Borges, Denilson Paulo Souza dos Santos

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Poster

CBDO 075 - A

Tidal Evolution and Spin-Orbit Dynamics: The Critical Role of Rheology.

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Oral communication

CBDO 076

Dynamical evolution of a debiased size distribution of Near Earth Objects

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Poster

CBDO 077

Orbital dynamics of the third body in the polar V808 Aurigae

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Poster

CBDO 078

Space Debris: Analysis and Preventive Mitigation

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Poster

CBDO 079

Transfer of Near-Earth Objects (NEOs) to the Centaurs' region

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Poster

CBDO 080

Structure of Chariklo's rings using a stellar occultation observed by the JWST

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J. Desmars (7), N. Pinilla-Alonso (8), R. G. French (9), Z.-Y. Lin (10),

E. Fernández-Valenzuela (8), M. Vara-Lubiano (2), M. Kretlow (2), D. Souami (11),

F. Braga-Ribas (12), J. Camargo (13), G. Benedetti-Rossi (14), F. L. Rommel (13),

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#### CBDO 081

Machine learning techniques for the design of Spinning Theter System

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Poster

#### CBDO 082

Multivariate analysis as a Spatial Debris mitigation strategy

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Poster

#### CBDO 083 - A

Investigation about the internal structure of the trans-Neptunian asteroid Arrokoth

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Poster

#### CBDO 084 - A

The secular tidal evolution of a binary system in the viscous regime and singular perturbation theory

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Poster

#### CBDO 085 - A

Orbital mechanics around non-homogeneous elongated asteroids

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CBDO 086

Exocomet dynamics in the Kepler-90 extrasolar system

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Poster

CBDO 087 - A

Evaluation of centroiding algorithms for an autonomous star tracker

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Poster

CBDO 088 - A

Tidal evolution in dwarf planets systems

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Poster

CBDO 089 - A

Stable configurations for the retrograde planet in the  $\nu$  Octantis system

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Poster

CBDO 090

A Study on Space Debris Generated by a Break-Up Event

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Poster

CBDO 091 - A

Planetary resonances: properties for arbitrary eccentricities and mutual inclinations

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Oral communication



CBDO 092

Accretion and Uneven Depletion of the Main Asteroid Belt

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Poster

CBDO 093 - A

Stellar Occultation Technique for studying the Trojan (1172) Aneas

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Poster

CBDO 094 - A

A scenario for the origin of moons around super-Earths and their detectability

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Poster

CBDO 095 - A

Equilibrium figure for Quaoar using stellar occultation

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Poster

CBDO 096 - A

Secular dynamics of small bodies perturbed by an eccentric giant planet

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Poster

CBDO 097 - A

Exploring the Formation of the TOI-1130 Planetary System Using a Hydrodynamic Approach

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Oral communication

CBDO 098

Development of an electronic system for a CanSat

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Poster

CBDO 099

Earth-to-Earth transfer via powered lunar swing-by

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Poster

CBDO 100 - A

The migration of Mimas and the implications for the resonant motion of small Saturnian moons

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CBDO 101

Study of the Transport Dynamics in the Three-Body Problem

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Poster

CBDO 102

Studying plasma with electrostatic energy analyzer with different geometries and a RF choker filter

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Poster

CBDO 103

Rendezvous Maneuvers Optimized by Genetic Algorithm for Space Debris Removal

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Poster

#### CBDO 104 - A

Testing (911) Agamemnon 3D model with new Stellar Occultations and synthetic light curve generations.

Eros O. Gradovski (1), Felipe Braga-Ribas (1), Giuliano Margoti (1), Altair R. Gomes-Júnior (2), Gustavo B. Rossi (3), Roberto V. Martins (3,4), Marcelo Assafin (5), Bruno Sicardy (3), Josselin Desmars (3), Jose Ortiz (6)

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Poster

#### CBDO 105

Conception and build of a Langmuir's probe for analysis of a RF discharge generated plasma.

William Wenner Teixeira Sinésio, **José Leonardo Ferreira**, Júlio César de Melo Almeida, Helbert de Oliveira Coelho Júnior.

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Poster

#### CBDO 106

Constraining physical and orbital parameters for possible extrasolar ring systems

Tiago Pinheiro, Giovana Ramon, Rafael Sfair

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Poster

#### CBDO 107

Cloud Space Debris: Behavior Analysis of Debris in Clouds and Prospection of Collection Missions

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Poster

#### CBDO 108 - A

A Hamiltonian for 1/1 rotational secondary resonances, and application to small satellites of Saturn and Jupiter  
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Oral communication

CBDO 109

Stable Regions in the Kepler-80 System

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Poster

CBDO 110 - A

Determining the size and shape of the Trojan (1143) Odysseus through stellar occultation technique, reverse light curve analysis and 3D modeling

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Poster

CBDO 111 - A

Rings diversity around Small Solar System bodies: Discoveries and Detection Limits

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Poster

CBDO 112

Collision Avoidance Maneuvers Optimization Using Evolutionary Algorithms

Guilherme Marcos Neves, Francisco Das Chagas Carvalho, Denilson Paulo Souza dos Santos, Antônio Fernando Bertachini de Almeida Prado

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Poster

CBDO 113 - A

Staging and trajectory optimization of VLM-1 satellite launch vehicle

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Poster

CBDO 114

Twistless bifurcations on isochronous islands

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Poster

CBDO 115

Exploring the Lambert Problem: An Analysis of Orbital Maneuvers  
Eduardo Oliveira Noveti, Denilson Paulo Souza dos Santos  
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Poster

CBDO 116

University Satellite Instrumentation - Cubesat V2  
Carlos V. B. Domingues, Denilson P. S. Santos, Jorge K. Formiga  
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CBDO 117

Dynamic tides in the exoplanetary system CoRoT-3b.  
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Oral communication

CBDO 118 - A

Surface Characteristics of Asteroid (346724) 2011 UW158: A Large Super-Fast Rotator  
Caio Gomes (1), André Amarante (1), Filipe Monteiro (2)  
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Poster

CBDO 119

Decomposition of Symmetrical Classes of Central Configurations  
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Invited talk

CBDO 120 - A

On the Absence of Coorbital Satellites in the Galilean System  
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Poster

#### CBDO 121

Searching for orbits around Io considering the Laplacian resonance

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Poster

#### CBDO 122 - A

Dynamics around Psyche

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Poster

#### CBDO 123

Photometric Study of TNOs and Centaurs Observed by the Dark Energy Survey

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Rodrigo C. Bouffleur (1,3), Marcelo Assafin (2,3), Adriano Pieres (1,3), Roberto Vieira-Martins (1,3), Luiz  
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Poster

#### CBDO 124

Dynamics of dust particles from IDP collisions in the Saturn system.

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Poster

CBDO 125 - A

On the attraction of ellipsoids and the properties of the Newtonian attraction

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Oral communication

CBDO 126

Faint Young Sun Paradox: dynamic evolution and habitability

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Poster

CBDO 127 - A

Mapping Slopes Across the Surface of Red Asteroid (269) Justitia

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Poster

CBDO 128 - A

Machine learning techniques for autonomous satellite guidance during terminal rendezvous operations

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CBDO 129

Bifurcations of a Symmetric Family of Dziobek Configurations

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Oral communication

CBDO 130

Mitigating Actuator Faults in Spacecraft Formation Flying through a Reconfigurable Guidance Strategy

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Oral communication

### CBDO 131

Study of the Main Challenges in the Use of the Ensemble Kalman Filter in the Attitude Estimation Problem of Spacecraft

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Poster

### CBDO 132 - A

Simulation of measurements for low Earth orbit satellite GPS receivers

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Poster

### CBDO 133

Existence and Stability of Moon's Stationary Polar Orbits

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### CBDO 134

Dynamics of a particle around a non-spherical symmetrical body with a deep depression

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Poster

### CBDO 135 - A

Spacecraft Formation Flying Control Considering Solar Panel Failures and Differential Perturbations

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Poster



CBDO 136 - A

Secular Regimes in the Planetary Case of the 3-Body Problem at high (e, i).

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Poster

CBDO 137

Investigating Dynamical Structures in the TOI-178 System

Jovan Boskovic, **Rafael Sfair**, Christoph Schäfer

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Invited talk

CBDO 138

Space System Engineering Process to design orbit for an electromagnetic detection payload

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Poster

CBDO 139

Utilizing Cosmic Microwave Background Measurements for Improved Interstellar Navigation Systems

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Oral communication

CBDO 140

Existence and stability of equilibrium points above the poles on the Sun-Earth-Sail Problem

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Poster

CBDO 141 - A

Design of a Stepper Motor-based Control System for a Stratospheric Probe Tracking Antenna

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Poster

CBDO 142

Trade-off Families of Transfer Trajectories in the Cislunar region

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Poster

CBDO 143

Perilune Poincare Maps: a NRHO's Station Keeping Approach

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Oral communication

CBDO 144

An analytical study on the solar radiation pressure and planetary oblateness perturbations over orbital dynamical systems.

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Poster

CBDO 145 - A

On the topology of mean motion resonances in the full range of eccentricity and inclination

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Poster

CBDO 146

Formation Flying Design Applied for an Aurora Borealis Monitoring Mission

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Poster

CBDO 147

Classifying 4-body cocircular central configurations

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Poster

CBDO 148

The Shearless Attractor

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Withdrawn

CBDO 149 - A

Physical characteristics of Jupiter's Trojans combining the stellar occultation techniques with dimensionless 3D model

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Poster

CBDO 150

Lunar Artificial Satellite Constellation: Geometric Prowess Optimization

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CBDO 151

Dynamics and Control of Spacecraft Formation Flying Applied to Space-based Solar Power Missions

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Poster

CBDO 152 - A

Convergence of orbits to the stationary state for a family of two-dimensional nonlinear mappings

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Poster

CBDO 153 - A

The effect of eccentricity on the insolation and habitability of exoplanets

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Poster

CBDO 154 - A

Reinforcement Learning-Based Optimization of Controller Gains for Terminal Rendezvous Maneuvers

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Poster

CBDO 155 – Rejected

CBDO 156 - A

Evolution and Stability of Low Orbits Around the Moon

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Poster

CBDO 157

Development of AI for Navigation of Space Systems Considering Orbital Dynamics and Astronomy: A Case Study with SpaceX Crew Dragon Docking Simulation

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Poster

CBDO 158

Space Communication Protocols: A Comprehensive Review of Standards and Technologies for Satellite and Nano Satellite Missions

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Poster

CBDO 159 - A

The Dynamics About Trojan Asteroid (11351) Leucus: A Very Slow Rotator

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Poster

CBDO 160 - A

Evolution of a Space Debris Cloud

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Poster

CBDO 161

Development of AI for Analysis of Public NASA Images to Discover New Celestial Bodies

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Poster

CBDO 162 - A

Revisiting the dynamics of the Prometheus-Pandora System

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Poster

CBDO 163 - A

Space Situational Awareness: an Overview of Satellite Collision Avoidance Maneuvers

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Poster

CBDO 164

Orbital and spectral analysis of the meteor captured on April 25, 2024, over the state of Mato Grosso

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Poster

CBDO 165 - A

Study of space debris mitigation by means of orbital redirection through reentry using a heliosynchronous solar sail

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Poster

#### CBDO 166

Utilization of stochastic filters for Angles-Only Orbit Determination

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Poster

#### CBDO 167

The three-dimensional creep tide theory - Averaged equations and applications to long-term evolution of close-in exoplanetary systems

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Poster

#### CBDO 168 - A

Equilibrium Points and Surface Dynamics About Comet 67P/Churyumov-Gerasimenko

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Poster

#### CBDO 169

Dynamics of Rotation of Small Satellites of Saturn

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Poster

#### CBDO 170

Asteroids were born bigger: An implication of surface mass ablation during gas-assisted implantation into the asteroid belt

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Poster

#### CBDO 171 - A

Dynamics of a Solar Sail in Resonant Conditions with Solar Radiation Pressure Perturbation: Case of Mercury and Earth.

João Pedro Fagionato Agostinho, Tadashi Yokoyama, Victor Hugo Mota, Marcelo Domingos Marchesin

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Poster

CBDO 172 - N

Dynamics Study of Hippocamp: Future Resonant Scenario 13:11

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Poster

CBDO 173 - A

Assessing the Collision Potential of Space Debris after Fragmentation

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Poster

CBDO 174 - A

Analysis of the stable regions of the Kepler-20 system through frequency analysis

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Poster

CBDO 175

Particle regions around Quaoar system

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Poster

CBDO 176

Revisiting derivative-free nonlinear Kalman filtering: implementation aspects of algorithms CDKF, DDKF, CKF, AND UKF

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Poster

CBDO 177 - A

Fundamentals of Dynamical Astronomy and Elementary Applications in Resonant Dynamics of Saturn's Small Satellites - The Pan-Prometheus Case

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Poster

CBDO 178

Development of an electronic system for a CanSat

Bruno Gabriel Santos Prestes; Hildo Guillardí Júnior

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Poster

CBDO 179

Current scenario of space debris removal mechanisms

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Poster

CBDO 180

Space Debris Evolution: Case Studies

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Poster

CBDO 181

Quasi-critical and quasi-heliosynchronous orbits

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Poster

CBDO 182

Mathematical model of the orbital elevator motion

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Oral Communication

CBDO 183

Method of satellite constellation design for on-orbit servicing of multisatellite space systems on orbits with given parameters



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Oral Communication

CBDO 184  
NEOMOD: Dynamical Model of Near-Earth Objects from a Decade of Catalina Sky Survey Observations  
David Nevorsný  
Southwest Research Institute, Boulder, CO, USA  
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Invited talk

CBDO 185  
Stellar Occultations by Trans-Neptunian Objects  
Felipe Braga-Ribas  
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Invited talk

CBDO 186  
Geodetic and Geophysical Characterization of Ganymede with GALA, the Ganymede Laser Altimeter  
H. Hussmann  
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Invited talk

CBDO 187  
Pathways of survival for exomoons and inner exoplanets  
Michael Efroimsky and Valeri V. Makarov  
US Naval Observatory, Washington DC 20392  
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Invited talk

CBDO 188  
Dynamic of Centaurs, link with the giant planets and other small body populations  
Romina Paula Di Sisto<sup>1,2</sup>  
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Invited talk

CBDO 189  
Dynamics of a non-homogeneous straight segment: relative equilibria, stability, periodic solutions and singularities  
Claudio Vidal  
Departamento de Matematica, Facultad de Ciencias, Universidad del Bío-Bío, Concepcion, VIII Region, Chile

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Invited talk

CBDO 190

Attitude Representations of Artificial Satellites and Applications

Maria Cecília Zanardi

Retired professor from UNESP/ Guaratinguetá

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Invited talk

CBDO 191 - N

Design and Construction of a System of Magnetic Field Induced by Coils in a Vacuum Chamber for Experiments with Plasma Physics

João Gabriel Borges Aquino, José Leonardo Ferreira, Rodrigo Andrés Miranda

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Poster

CBDO 192 - N

Software Development for METAR Data Estimation for Performance Simulation Optimization in the Aeronautical Sector

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Poster

CBDO 193 - N

Optimization of the parameters of the covariance matrices of the Extended Kalman Filter for attitude estimation of the CBERS satellite

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Poster

CBDO 194 - N

Resonance Jumps in Space Debris Dynamics: Impacts on Low Earth Orbit

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Poster

CBDO 195 - N

Studying the effects of Earth's atmospheric refraction in Stellar Occultations

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Poster

CBDO 196 - N

Investigating the Parameter Space in Two-Dimensional Discrete Mappings by Lyapunov Exponents

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Poster

CBDO 197 - N

New transient co-orbital asteroids of Venus

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Poster

CBDO 198 - N

Practical Aspects of LCS Detection with FTLE in Astrodynamics

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Poster

CBDO 199 - N

Differential Algebra in the Three-Body Problem

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Poster

CBDO 200 - N

Preliminary results of the stellar occultation by the Trojan (4709) Ennomos.

Ghoulam Boudiba, Damya Souami, Felipe Braga Ribas, Helio Dutra, Eros Gradovski, Marcelo Assafin, Bruno Sicardy, Josselin Desmars, Djounai Baba Aissa, Khalil Dhaiffallah, Zineddine Bouyahaoui, Mourad Dehbaoui, Ennomos Occultation Team.

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Poster

CBDO 201 - N

Seismic wave propagation in loose granular media

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Poster

CBDO 202 - N

Analysis of Symmetric Periodic Orbits of Irregular Bodies through the Articulated Tripole-Segment System

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Poster

CBDO 203 - N

Characterization of basins of attraction in 1D models and the extrapolation for higher dimension

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Poster

CBDO 204 - N

The Influence of Disk Mass on the Fragmentation of Protoplanetary Disks

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Poster

CBDO 205 - N

Study of families of symmetric periodic orbits around prolate bodies

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Poster

CBDO 206 - N

On the Spin-Orbit Phase-Space of an Artificial Satellite

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Poster

CBDO 207 - N

Extrasolar planets: classifications and habitable zones

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Poster

CBDO 208 - N

N - Controlling telescope and image acquisition with RaspberryPI for stellar occultation observations

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Poster

CBDO 209 - N

The Veronese variety associated with Dziobek central configurations

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Poster