

CBDO 2024 - FINAL PROGRAM
(subject to minor changes until the meeting)

First week of December 2024

Monday, December 2nd

12:10 pm - Registration and reception of participants

1:40 pm - Opening

1:50 pm - Wagner Sessin Award

2:00 pm - Opening Talk

Italy-Brazil Joint Science and Technology Cooperation in Space Technology: the SPLASH Project
(CBDO 207)

Ignazio Dimino

CIRA, Centro Italiano Ricerche Aerospaziali, Capua, CE, Italy

First session of Dynamical and Planetary Astronomy

Chairman: Silvia Giuliatti Winter

2:50 pm - Oral presentation 01

The Orbital Eccentricities of Directly Imaged Companions Using Observable-based Priors: Implications
for Population-level Distributions (CBDO 001)

Clarissa R. Do Ó

University of California, San Diego & University of California, Los Angeles, USA

3:10 pm - Oral presentation 02

The co-orbital dynamics in binary systems (CBDO 002)

Fernando Roig

National Observatory, ON, Rio de Janeiro, RJ, Brazil

3:30 pm - Oral presentation 03

Vision Transformers for identifying asteroids interacting with secular resonances (CBDO 006)

Valerio Carruba

UNESP - São Paulo State University, Guaratinguetá, SP, Brazil

3:50 pm - Coffee break

4:10 pm - Poster Session 1. CBDO 001 – CBDO 105, except oral presentation.

Tuesday, December 3rd

Second session of Dynamical and Planetary Astronomy

Chairman: Sylvio Ferra-Mello

8:30 am - Invited talk 1

Dynamic of Centaurs, link with the giant planets and other small body populations (CBDO 188)

Romina Paula Di Sisto

Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, Argentina

9:20 am - Invited talk 2

Stellar Occultations by Trans-Neptunian Objects (CBDO 185)

Felipe Braga Ribas

Federal University of Technology of Paraná, UTFPR, Curitiba, PR, Brazil

10:10 am – Coffee Break

10:30 am - Oral presentation 04

Non-transiting exoplanet characterization using TTV pattern and Deep Learning (CBDO 035)

Marco Antonio Petersem-Domingues

National Observatory, ON, Rio de Janeiro, RJ, Brazil

10:50 am - Oral presentation 05

The Effect of Triton's Evolution on Neptune's Spin Axis (CBDO 039)

Rodney Gomes

National Observatory, ON, Rio de Janeiro, RJ, Brazil

11:10 am - Oral presentation 06

A Hamiltonian for 1/1 rotational secondary resonances, and application to small satellites of Saturn and Jupiter (CBDO 108)

Nelson Callegari Júnior

UNESP - São Paulo State University, Rio Claro, SP, Brazil

11:30 am - Oral presentation 07

Analysing the dynamics of Kepler-90 planetary system (CBDO 049)

Silvia Giuliatti Winter

UNESP - São Paulo State University, Guaratinguetá, SP, Brazil

11:50 am - Oral presentation 08

Estimation of the viscosity of trans-neptunian dwarf planets through the synchronous motion of Eris (CBDO 100)

Adrián Rodríguez

Valongo Observatory, Federal University of Rio de Janeiro, UFRJ, Rio de Janeiro, RJ, Brazil

12:10 pm – Lunch

First session of Orbital Mechanics and Spacecraft Attitude Determination and Control

Chairman: Priscilla Silva

1:40 pm - Invited talk 3

Geodetic and Geophysical Characterization of Ganymede with GALA, the Ganymede Laser Altimeter (CBDO 186)

Hauke Hussmann

DLR Institute of Planetary Research, Berlin, Germany

2:30 pm - Oral presentation 09

Preliminary Design of Trajectories for Rendezvous with 2001 SN263 (CBDO 210)

Rodolfo Batista Negri

Federal University of São Paulo, UNIFESP, São José dos Campos, SP, Brazil

2:50 pm - Oral presentation 10

Analytical Modeling of the Gravitational Potential of Irregularly Shaped Celestial Bodies considering three distinct internal structures: Application to (21) Lutetia (CBDO 025)

Marcelo L. Mota

Federal Institute of São Paulo, IFSP, Hortolândia, SP, Brazil

3:10 pm - Oral presentation 11

Study of a satellite constellation for INPE's BiomeSat mission (CBDO 054)

Liana Dias Gonçalves

National Institute for Space Research, INPE, São José dos Campos, SP, Brazil

3:30 pm - Oral presentation 12

Long and short-duration orbits around the Moon for different types of missions (CBDO 045)

Jean Paulo dos S. Carvalho

Federal University of Recôncavo da Bahia, UFRB, Feira de Santana, BA, Brazil

3:50 pm – Coffee Break

4:10 pm – Poster Session 2. CBDO 001 – CBDO 105, except oral presentation.

Wednesday, December 4th

8:30 am - Mini-course

Optimal control of spatial trajectories using GEKKO

Jhonathan Piñeros

Space systems analyst, SAIPHER

9:10 am – Break

Second session of Orbital Mechanics and Spacecraft Attitude Determination and Control

Chairman: Rosana Araújo

9:20 am - Invited talk 4

Attitude Representations of Artificial Satellites and Applications (CBDO 190)

Maria Cecília Zanardi

UNESP - São Paulo State University, Guaratinguetá, SP, Brazil

10:10 am – Coffee Break

10:30 am - Oral presentation 13

Use of a Rational Agent to determine the attitude of a Solar Sail (CBDO 056)

Lucas G. Meireles

UNESP - São Paulo State University, Guaratinguetá, SP, Brazil

10:50 am - Oral presentation 14

Orbital mechanics around non-homogeneous elongated asteroids (CBDO 085)

J. D. Gutiérrez

Universidad de Zaragoza, Spain

11:10 am - Oral presentation 15

Machine learning techniques for autonomous satellite guidance during terminal rendezvous operations (CBDO 0128)

Rogério Rodrigues dos Santos

UNESP - São Paulo State University, Guaratinguetá, SP, Brazil

11:30 am - Oral presentation 16

Mitigating Actuator Faults in Spacecraft Formation Flying through a Reconfigurable Guidance Strategy (CBDO 130)

Willer Gomes dos Santos

Aeronautics Institute of Technology, ITA, São José dos Campos, SP, Brazil

11:50 am - Oral presentation 17

Existence and Stability of Moon's Stationary Polar Orbits (CBDO 133)

Marcelo D. Marchesin

Federal University de Minas Gerais, UFMG, Belo Horizonte, MG, Brazil

12:10 pm - Lunch

Third session of Orbital Mechanics and Spacecraft Attitude Determination and Control

Chairman: Antonio F. B. A. Prado

1:40 pm - Oral presentation 18

Utilizing Cosmic Microwave Background Measurements for Improved Interstellar Navigation Systems (CBDO 139)

Pedro Kukulka de Albuquerque

George Mason University, Fairfax, Virginia, USA

2:00 pm - Oral presentation 19

Lunar Artificial Satellite Constellation: Geometric Prowess Optimization (CBDO 150)

Ana Paula Marins Chiaradia

UNESP - São Paulo State University, Guaratinguetá, SP, Brazil

2:20 pm - Oral presentation 20

Mathematical model of the orbital elevator motion (CBDO 182)

Sergei Kupreev

RUDN University, Moscow, Russia

2:40 pm - Oral presentation 21

Method of satellite constellation design for on-orbit servicing of multisatellite space systems on orbits with given parameters (CBDO 183)

Vladimir Razoumny

RUDN University, Moscow, Russia

First session of Dynamical System

Chairman: Lucas Ruiz dos Santos

3:00 pm - Invited talk 5

Decomposition of Symmetrical Classes of Central Configurations (CBDO 119)

Marcelo Pedro dos Santos.

Federal Rural University of Pernambuco, UFRPE, Recife, PE, Brazil

3:50 pm - Coffee Break

4:10 pm – Poster Session 3. CBDO 106 – CBDO 210, except oral presentation.

6:30 pm - Social Barbecue at ADC/INPE

Thursday, December 5th

8:30 am - Mini-course

Optimal control of spatial trajectories using GEKKO

Jhonathan Piñeros

Space systems analyst, SAIPHER

9:10 am – Break

Second session of Dynamical System

Chairman: Marcelo Marchesin

9:20 am - Invited talk 6

Dynamics of a non-homogeneous straight segment: relative equilibria, stability, periodic solutions and singularities (CBDO 189)

Claudio Vidal

Universidad del Bío-Bío, Concepción, VIII Region, Chile

10:10 am - Coffee Break

10:30 am - Oral presentation 22

Isochronous Bifurcations (CBDO 044)

Iberê L. Caldas

São Paulo University, USP, São Paulo, SP, Brazil

10:50 am - Oral presentation 23

Dynamical evolution of a system composed by extended deformable bodies with complex rheologies (CBDO 064)

Vitor M. de Oliveira

São Paulo University, USP, São Paulo, SP, Brazil

11:10 am - Oral presentation 24

The secular tidal evolution of a binary system in the viscous regime and singular perturbation theory (CBDO 084)

Lucas Ruiz dos Santos

Federal University of Itajubá, UNIFEI, Itajubá, MG, Brazil

11:30 am - Oral presentation 25

Tidal Evolution and Spin-Orbit Dynamics: The Critical Role of Rheology (CBDO 075)

Clodoaldo Ragazzo

São Paulo University, USP, São Paulo, SP, Brazil

11:50 am - Oral presentation 26

On the attraction of ellipsoids and the properties of the Newtonian attraction (CBDO 125)

Alain Albouy

Observatoire de Paris, CNRS, France

12:10 pm - Lunch

Third session of Dynamical System

Chairman: Eduardo Leandro

1:40 pm - Oral presentation 27

Bifurcations of a Symmetric Family of Dziobek Configurations (CBDO 129)

Michelle Gonzaga dos Santos

Federal University of Pernambuco, UFPE, Recife, PE, Brazil

2:00 pm - Oral presentation 28

Perilune Poincare Maps: a NRHO's Station Keeping Approach (CBDO 143)

Caio Jansen Accioly

Aeronautics Institute of Technology, ITA, São José dos Campos, SP, Brazil

2:20 pm - Oral presentation 29

The Veronese variety associated with Dziobek central configurations (CBDO 209)

Thiago Dias Oliveira Silva

Federal Rural University of Pernambuco, UFRPE, Recife, PE, Brazil

Third session of Dynamical and Planetary Astronomy

Chairman: Nelson Callegari Júnior

2:40 pm - Invited talk 7

Investigating Dynamical Structures in the TOI-178 System (CBDO 137)

Rafael Sfair

UNESP - São Paulo State University, Guaratinguetá, SP, Brazil

3:30 pm - Oral presentation 30

Stable configurations for the retrograde planet in the ν Octantis system (CBDO 089)

Alan C. Signor

IGCE, UNESP - São Paulo State University, 3506-900 Rio Claro, SP, Brazil

CFisUC, Department of Physics, University of Coimbra, 3004-516 Coimbra, Portugal

3:50 pm - Coffee Break

4:10 pm – Poster Session 4. CBDO 106 – CBDO 210, except oral presentation.

Friday, December 6th

8:30 am

Mini-course

Optimal control of spatial trajectories using GEKKO

Jhonathan Piñeros

Space systems analyst, SAIPHER

9:10 am – Break

Third session of Dynamical and Planetary Astronomy

Chairman: Priscilla Pires

9:20 am - Invited talk 8

NEOMOD: Dynamical Model of Near-Earth Objects from a Decade of Catalina Sky Survey Observations (CBDO 184)

David Nesvorný

Southwest Research Institute, Boulder, CO, USA

10:10 am - Coffee Break

10:30 am - Oral presentation 31

Exploring the Formation of the TOI-1130 Planetary System Using a Hydrodynamic Approach (CBDO 097)

Bárbara Celi Braga Camargo

Valongo Observatory, Federal University of Rio de Janeiro, UFRJ, Rio de Janeiro, RJ, Brazil

10:50 am - Oral presentation 32

A numerical analysis of planar colliding binary companions (CBDO 061)

Gabriel Caritá

National Institute for Space Research, INPE, São José dos Campos, SP, Brazil

11:10 am - Oral presentation 33

Planetary resonances: properties for arbitrary eccentricities and mutual inclinations

Tabare Gallardo

Facultad de Ciencias, Udelar, Uruguay

11:30 am - Oral presentation 34

On the Dynamics around Quaoar: its shape and the unstable limit (CBDO 042)

Othon Winter

UNESP - São Paulo State University, Guaratinguetá, SP, Brazil

11:50 am - Oral presentation 35

Dynamic tides in the exoplanetary system CoRoT-3b (CBDO 117)

Sylvio Ferraz Mello

São Paulo University, USP, São Paulo, SP, Brazil

12:10 am - Closing Ceremony

Information about the Minicourse:

Content: The GEKKO library (in Python) will be implemented as an alternative to solve two problems of optimal control of space trajectories: orbital transfer and planetary re-entry.

- The sessions will be online on Wednesday, Thursday, and Friday between 8:30 and 9:10 pm.

- Estimated time: three 40-minute sessions.

- Requirements (desirable): Laptop with Python software, Jupyter Notebook, GEKKO, Numpy and Matplotlib libraries.

Instructor: Dr. Jhonathan Murcia Piñeros

Space systems analyst, SAIPHER

Final program (subject to minor changes)

First week of December 2024

	Time	Monday, 2	Tuesday, 3	Wednesday, 4	Thursday, 5	Friday, 6	
am	8:30		Invited talk 1 Romina Di Sisto CBDO 188	Mini-course Optimal control of spatial trajectories using GEKKO	Mini-course Optimal control of spatial trajectories using GEKKO	Mini-course Optimal control of spatial trajectories using GEKKO	
	8:40			break	break	break	
	8:50						
	9:00						
	9:10						
	9:20						
	9:30		Invited talk 2 Felipe Braga-Ribas CBDO 285	Invited talk 4 Maria Cecília Zanardi CBDO 190	Invited talk 6 Claudio Vidal Díaz CBDO 189	Invited talk 8 David Nesvorný CBDO 184	
	9:40						
	9:50						
	10:00						
	10:10						
	10:20		Coffee break	Coffee break	Coffee break	Coffee break	
	10:30		Oral Presentation 4 CBDO 035	Oral Presentation 13 CBDO 056	Oral Presentation 22 CBDO 044	Oral Presentation 31 CBDO 097	
	10:40						
	10:50						
	11:00						
	11:10						
	11:20		Oral Presentation 6 CBDO 108	Oral Presentation 15 CBDO 128	Oral Presentation 24 CBDO 073	Oral Presentation 33 CBDO 091	
	11:30						
	11:40						
11:50							
12:00							
pm	12:10	Registration and reception of participants	Lunch	Lunch	Lunch	Closing Ceremony	
	12:20						
	12:30						
	12:40						
	12:50						
	1:00						
	1:10						
	1:20						
	1:30						
	1:40						Opening
	1:50	Wagner Sessin Ward	Oral Presentation 19 CBDO 150	Oral Presentation 28 CBDO 143			
	2:00	Opening talk 1 Ignazio Dimino CBDO 210	Oral Presentation 20 CBDO 182	Oral Presentation 29 CBDO 209			
	2:10		Oral Presentation 9 CBDO 009	Oral Presentation 21 CBDO 183	talk 7 Rafael Sfair CBDO Invited 139		
	2:20			Invited talk 5 Marcelo Santos CBDO 119			
	2:30						
	2:40	Oral Presentation 10 CBDO 026					
	2:50	Oral Presentation 1 CBDO 001	Oral Presentation 11 CBDO 054	Oral Presentation 30 CBDO 089			
	3:00	Oral Presentation 2 CBDO 002					
	3:10	Oral Presentation 3 CBDO 006					
	3:20	Coffee break	Coffee break	Coffee break	Coffee break		
	3:30						
	3:40						
	3:50	Coffee break	Coffee break	Coffee break	Coffee break		
	4:00						
	4:10						
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