

**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** - 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

## **Tuesday, December 3rd**

### **8:30 am - Mini-course**

Optimal control of spatial trajectories using GEKKO

Jhonathan Piñeros

College of Engineering / Embry Riddle Aeronautical University, Daytona Beach, FL, USA

### **9:10 am - Break**

## **Second session of Dynamical and Planetary Astronomy**

**Chairman:** Sylvio Ferra-Mello

### **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**

The migration of Mimas and the implications for the resonant motion of small Saturnian moons (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 009)

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: Application to (285263) 1998 QE2 (CBDO 026)

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 1 (all areas)**

## **Wednesday, December 4th**

### **8:30 am - Mini-course**

Optimal control of spatial trajectories using GEKKO

Jhonathan Piñeros

College of Engineering / Embry Riddle Aeronautical University, Daytona Beach, FL, USA

### **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 2 (all areas)

**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

College of Engineering / Embry Riddle Aeronautical University, Daytona Beach, FL, USA

**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, Concepcion, 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

Resonant interactions between objects on counter-revolving orbits (CBDO 073)

Helena Moraes

UNESP - São Paulo State University, Rio Claro, SP, 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  $\nu$  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 3 (all areas)

### **Friday, December 6th**

**8:30 am**

Mini-course

Optimal control of spatial trajectories using GEKKO

Jhonathan Piñeros

College of Engineering / Embry Riddle Aeronautical University, Daytona Beach, FL, USA

**9:10 am** - Break

### **Third session of Dynamical and Planetary Astronomy**

**Chairman:** Priscilla Pires

**9:20 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

**9:40 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

**10:00 am** - Coffee Break

**10:20 am - Oral presentation 33**

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

Othon Winter

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

**10:40 am - Oral presentation 34**

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

Sylvio Ferraz-Mello

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

**11:00 am - Invited talk 08**

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

**11:50 am - Closing Ceremony**

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## 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		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	Mini-course Optimal control of spatial trajectories using GEKKO
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pm	12:10	Registration and reception of participants	Lunch	Lunch	Lunch	
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	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 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 1 CBDO 001		Oral Presentation 10 CBDO 026	Oral Presentation 30 CBDO 089	
	3:00	Oral Presentation 2 CBDO 002	Oral Presentation 11 CBDO 054			
	3:10	Oral Presentation 3 CBDO 006	Oral Presentation 12 CBDO 045			
	3:20	Coffee break	Coffee break	Coffee break	Coffee break	
	3:30					
	3:40	Invited talk 1 Romina Di Sisto CBDO 188	Poster Session 1 (all areas)	Poster Session 2 (all areas)	Poster Session 3 (all areas)	
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