

# CURRICULUM VITAE

## PERSONAL DATA

- First Name: Cătălin Bogdan
- Last Name: Galeş
- Date and place of birth: July 29, 1976/ Gura Humorului (Romania)
- Work address: Al. I. Cuza University of Iaşi, Faculty of Mathematics, Blvd. Carol I, No. 11, 700506, Iaşi, Romania
- Phone: +40 742258476
- E-mail: [cgales@uaic.ro](mailto:cgales@uaic.ro)
- Web page: <http://www.math.uaic.ro/~cgales/>
- Nationality: Romanian

## EDUCATION

- 1990-1994: High School: Liceul Petru Rareş (Suceava);
- 1994-1998: Faculty of Mathematics, Al.I. Cuza University of Iaşi;
- 1998-2000: Master studies, Faculty of Mathematics, Al. I. Cuza University of Iaşi
- 2000-2004: Ph.D. thesis: Initial boundary value problems in continuum mechanics, Al.I. Cuza University of Iaşi (supervisor: Prof. Stan Chiriţă).
- 2018: Habitation thesis: Mathematical modelling in Celestial and Continuum Mechanics

## SCIENTIFIC INTERESTS

- Dynamics modeling in Celestial mechanics and Astrodynamics
- Resonances in Celestial mechanics
- Space debris dynamics
- Modeling conservative and dissipative phenomena
- Orbit propagation
- Numerical indicators of chaos
- Perturbation theories of nearly-integrable systems
- Hamiltonian and Lagrangian mechanics
- Elasticity and thermoelasticity
- Saint-Venant's principle
- Waves and vibrations in elastic media

## ACADEMIC CAREER

- 1999 - 2001: Research assistant, Faculty of Mathematics, Al. I. Cuza University of Iaşi
- 2001 - 2004: Assistant professor, Faculty of Mathematics, Al. I. Cuza University of Iaşi
- 2004 - 2014: Lecturer, Faculty of Mathematics, Al. I. Cuza University of Iaşi
- 2014 - 2020: Associate Professor, Faculty of Mathematics, Al. I. Cuza University of Iaşi
- Since 2020: Full Professor, Faculty of Mathematics, Al. I. Cuza University of Iaşi
- Since 2023: Director of the *Mendel Haimovici Centre on Applied Mathematics for Astronomy, Theoretical Mechanics and Sciences* (<http://www.math.uaic.ro/~cmaams/>)

## AWARDS

1. **Romanian Academy Prize Spiru Haret** for a group of papers on the topic: *Modelling in continuum mechanics*, published in 2011.
2. **Researcher of the year**, prize offered by Al. I. Cuza University of Iaşi for the papers published in 2012.

## MEMBERSHIPS OF SCIENTIFIC SOCIETIES

1. Member of the **International Astronomical Union (IAU)**, Division A Fundamental Astronomy, Division F Planetary Systems and Astrobiology, Inter-Division A-F Commission Celestial Mechanics and Dynamical Astronomy.
2. Member of the Romanian National Committee for Astronomy (CNRA).

## INVITED SPEAKER AT SCIENTIFIC EVENTS

More than 40 talks delivered at conferences, workshops and schools.

## **PUBLICATIONS**

Author of more than 54 scientific research papers, 8 book chapters and editor of 2 books.

## **ORGANIZATION OF SYMPOSIA, WORKSHOPS AND SCHOOLS**

1. Co-chair of the IAU Symposium 364, Multi-scale (Time and Mass) Dynamics of Space Objects, 18-22 October 2021, Al. I. Cuza University of Iasi, Romania (<https://www.iau.org/science/meetings/past/symposia/2526/>)
2. Committee member of the school: *Satellite Dynamics and Space Missions: Theory and Applications of Celestial Mechanics*, August 28 - September 2, 2017, San Martino al Cimino (VT), Italy, (<http://adams.dm.unipi.it/~simca/sdsm2017/>).
3. Committee member of The Training School III (Stardust-R project) "Space Environment Stability and Resilience" March 15-19, 2021 (<http://www.stardust-network.eu/training/the-training-school-iii/>)
4. Committee member of The Global virtual workshop (Stardust-R project) Space Traffic Management and Resilient Space Environment 13-17 September 2021 (<http://www.stardust-network.eu/training/the-global-virtual-workshop-ii/>)
5. Committee member of The 2nd International Stardust Conference, 7-11 November 2022, ESA European Space Research and Technology Centre (ESTEC) Noordwijk, The Netherlands (<http://www.stardust-network.eu/starcon2/>)

## **GRANTS**

- a. Supervisor in the international grant: H2020-MSCA-ITN-ETN Project "STARDUST-R", period 2019-2023. (<http://www.stardust-network.eu/>)
- b. Director of two national grants for young researches:
  1. CEEEX grant, code 72, no. 1510/7.04.2006, period 2006-2008.
  2. CNCISIS grant, code TE\_184, no. 86/30.07 2010, period 2010-2013.Member of 8 national grants.

## **SUPERVISION OF GRADUATE STUDENTS**

- 20 Bachelor students (Mathematics degree)
- 22 Master students (Mathematics degree)
- 1 Marie Curie fellow - Early stage researcher
- 1 PhD finished and 1 PhD on-going

## **EDITORIAL ACTIVITIES**

Editor of the scientific journal CELESTIAL MECHANICS AND DYNAMICAL ASTRONOMY.

## **TEACHING**

**Courses and seminars:** Astronomy, Mathematical methods in space sciences, Theoretical Mechanics, Hamiltonian and Lagrangian mechanics, Celestial Mechanics, Continuum Mechanics, Probabilities, C sharp programming, JAVA programming.

## **POPULARIZATION OF SCIENCE**

- A) Over 500 planetarium lessons for students and pupils interested in astronomical phenomena;
- B) Articles published in the local newspapers.
- C) Interviews given to the local press for promoting various astronomical events.

December, 2025

Cătălin Galeş

# CĂTĂLIN GALEȘ'S LIST OF SCIENTIFIC PUBLICATIONS

## A. Papers

1. C. Galeș, M. Apetrii, G. Nadabaică, Modeling the resonant dynamics of infinitesimal particles orbiting nonspherical rotating bodies, **Celestial Mechanics and Dynamical Astronomy**, 137, Art. no. 28 (2025).
2. C. Galeș, S. Chiriță, Rayleigh waves in symmetry planes of orthotropic thermoelastic layered structures: Explicit secular equations, **Journal of Thermal Stresses**, 48, 529-551 (2025).
3. M. Apetrii, A. Celletti, C. Efthymiopoulos, C. Galeș, T. Vartolomei, Simulating a breakup event and propagating the orbits of space debris, **Celestial Mechanics and Dynamical Astronomy**, 136 (5), art. no. 35, (2024).
4. A. Celletti, C. Galeș, V. Rodriguez-Fernandez, M. Vasile, Classification of regular and chaotic motions in Hamiltonian systems with deep learning, **Scientific Reports**, 12 (1), art. no. 1890, (2022).
5. S. Chiriță, C. Galeș, Wave propagation and attenuation in time in local thermal non-equilibrium triple porosity thermoelastic medium, **Acta Mechanica**, 232 (11), pp. 4217 - 4233, (2021).
6. L. Zhou, C. Lhotka, C. Gales, Y. Narita, L.-Y Zhou, Dynamics of charged dust in the orbit of Venus, **Astronomy and Astrophysics**, 645, art. no. A63, (2021).
7. J. Burgos-García, A. Celletti, C. Gales, M. Gidea, W.-T. Lam, Hill Four-Body Problem with Oblate Bodies: An Application to the Sun–Jupiter–Hektor–Skamandrios System, **Journal of Nonlinear Science**, 30 (6), pp. 2925 - 2970, (2020).
8. C. Galeș, S. Chiriță, Wave propagation in materials with double porosity, **Mechanics of Materials**, 149, art. no. 103558, (2020).
9. A. Celletti, C. Gales, C. Lhotka, Resonances in the Earth's space environment, **Communications in Nonlinear Science and Numerical Simulation**, vol. 84, (2020) Article no. 105185.
10. C Lhotka, C Galeș, Charged dust close to outer mean-motion resonances in the heliosphere **Celestial Mechanics and Dynamical Astronomy**, vol. 131 (2019), Article no. 49.
11. A. Celletti and C. Galeș, Dynamics of resonances and equilibria of Low Earth Objects, **SIAM Journal on Applied Dynamical Systems**, 17 (2018), 203-235.
12. A. Celletti, C. Galeș, G. Pucacco and A. Rosengren, Analytical development of the lunisolar disturbing function and the critical inclination secular resonance, **Celestial Mechanics and Dynamical Astronomy**, 127 (2017), 259-283.
13. A. Celletti, C. Efthymiopoulos, F. Gachet, C. Galeș and G. Pucacco, Dynamical models and the onset of chaos in space debris, **International Journal of Non-Linear Mechanics**, 90 (2017), 147-163.
14. C. Lhotka, A. Celletti and C. Galeș, Poynting-Robertson drag and solar wind in the space debris problem, **Monthly Notices of the Royal Astronomical Society**, 460 (2016), 802-815.
15. A. Celletti, C. Galeș, A study of the lunisolar secular resonance  $2d\omega/dt+d\Omega/dt=0$ , **Frontier in Astronomy and Space Sciences - Fundamental Astronomy**, 31 March 2016 | <http://dx.doi.org/10.3389/fspas.2016.00011> (on-line paper)
16. A. Celletti, C. Galeș and G. Pucacco, Bifurcation of lunisolar secular resonances for space debris orbits, **SIAM Journal on Applied Dynamical Systems**, 15 (2016), 1352-1383.
17. A. Celletti and C. Galeș, Dynamical investigation of minor resonances for space debris, **Celestial Mechanics and Dynamical Astronomy**, 123 (2015), 203-222.
18. A. Celletti and C. Galeș, A study of the main resonances outside the geostationary ring, **Advances in Space Research**, 56 (2015), 388-405.
19. A. Celletti and C. Galeș, On the dynamics of space debris: 1:1 and 2:1 resonances, **Journal of Nonlinear Science** 24 (2014), 1231-1262.
20. C. Galeș and N. Baroiu, On the bending of plates in the electromagnetic theory of microstretch elasticity, **ZAMM**, 94 (2014), 55-71.
21. I.D. Ghiba and C. Galeș, Some qualitative results in the linear theory of micropolar solid-solid mixtures, **Journal of Thermal Stresses**, 36 (2013), 426-445.
22. C. Galeș, A cartographic study of the phase space of the restricted three body problem. Application to the Sun-Jupiter-Asteroid system, **Communications in Nonlinear Science and Numerical Simulation**, 17 (2012), 4721-4730.
23. I.D. Ghiba and C. Galeș, On the fundamental solutions for micropolar fluid-fluid mixtures under steady state vibrations, **Applied Mathematics and Computation**, 219 (2012), 2749-2759.

24. C. Galeş, Structural stability and convergence in piezoelectricity, **SIAM Journal on Applied Mathematics**, **72** (2012), 1856-1868.
25. C. Galeş, Some results in micromorphic piezoelectricity, **European Journal of Mechanics-A/Solids**, **31** (2012), 37-46.
26. C. Galeş, Spatial behavior and continuous dependence results in the linear dynamic theory of magneto-electroelasticity, **Journal of Elasticity**, **108** (2012), 208-223.
27. C. Galeş, Spatial behavior in the electromagnetic theory of microstretch elasticity, **International Journal of Solids and Structures**, **48** (2011), 2755-2763.
28. C. Galeş, A spatial decay estimate in thermoviscoelastic composite cylinders, **Analele Ştiinţifice Univ. Al. I. Cuza Iaşi, Matematica**, **LVII** (2011), 111-129.
29. C. Galeş, On spatial behavior of harmonic vibrations in viscoelastic Reissner-Mindlin plates, **International Journal of Solids and Structures**, **48** (2011), 243-248.
30. C. Galeş, On uniqueness and continuous dependence in nonlinear thermoviscoelasticity, **Journal of Thermal Stresses**, **34** (2011), 366-377.
31. C. Galeş, I.D. Ghiba and I. Ignătescu, Asymptotic partition of energy in micromorphic thermopiezoelectricity, **Journal of Thermal Stresses**, **34** (2011), 1241-1249.
32. I.D. Ghiba and C. Galeş, A uniqueness result for the motion of micropolar solid-fluid mixtures in unbounded domain, **Annali dell'Universita di Ferrara**, **57** (2011) 275-286.
33. C. Galeş, On the nonlinear theory of micromorphic thermoelastic solids, **Mathematical Problems in Engineering**, Volume 2010 (2010), Article ID 415304, 16 pages.
34. C. Galeş and I.D. Ghiba, On uniqueness and continuous dependence of solutions in viscoelastic mixtures, **Meccanica**, **45** (2010), 901-909.
35. C. Galeş, On spatial behavior of the harmonic vibrations in thermoviscoelastic mixtures, **Journal of Thermal Stresses**, **32** (2009), 512 – 529.
36. C. Galeş and S. Chiriţă, On spatial behavior in linear viscoelasticity, **Quarterly of Applied Mathematics**, **67** (2009), 707-723.
37. S. Chiriţă, C. Galeş and I. D. Ghiba, On spatial behavior of the harmonic vibrations in Kelvin-Voigt materials, **Journal of Elasticity**, **93** (2008), 81-92.
38. C. Galeş, Some results in the dynamics of viscoelastic mixtures, **Mathematics and Mechanics of Solids**, **13** (2008), 124-147.
39. C. Galeş, On the asymptotic spatial behaviour in the theory of mixtures of thermoelastic solids, **International Journal of Solids and Structures**, **45** (2008), 2117-2127.
40. S. Chiriţă and C. Galeş, A mixture theory for microstretch thermoviscoelastic solids, **Journal of Thermal Stresses**, **31** (2008), 1099-1124.
41. C. Galeş and C. Chiruţă, Investigation of asteroid dynamics via numerical methods, **Romanian Astronomical Journal**, **18**, Supplement (2008), 161-175.
42. C. Galeş, On the spatial behavior in the theory of viscoelastic mixtures, **Journal of Thermal Stresses**, **30** (2007), 1-24.
43. C. Galeş, A mixture theory for micropolar thermoelastic solids, **Mathematical Problems in Engineering**, Vol. 2007 (2007), Article ID 90672, 21 pages.
44. C. Galeş, On the quasi-static boundary value problems in the theory of swelling porous elastic soils, **Multidiscipline Modeling in Materials and Structures**, **2** (2006), 227-246.
45. C. Galeş, Waves and vibrations in the theory of swelling porous elastic soils, **European Journal of Mechanics A/Solids**, **23** (2004), 345-357.
46. C. Galeş, Potential method in the linear theory of swelling porous elastic soils, **European Journal of Mechanics A/Solids**, **23** (2004), 957-973.
47. C. Galeş, On the asymptotic partition of energy in the theory of swelling porous elastic soils, **Archives of Mechanics**, **55** (2003), 91-107.
48. C. Galeş, Spatial decay estimates for solutions describing harmonic vibrations in the theory of swelling porous elastic soils, **Acta Mechanica**, **161** (2003), 151-164.
49. C. Galeş, Existence and uniqueness results in the theory of swelling porous elastic soils, **Analele Ştiinţifice ale Universitatii "Al. I. Cuza" Iaşi**, vol. **49** (2003), 161-174.
50. C. Galeş, Some uniqueness and continuous dependence results in the theory of swelling porous elastic soils, **International Journal of Engineering Science**, **40** (2002), 1211-1231.
51. C. Galeş, On the spatial behavior in the theory of swelling porous elastic soils, **International Journal of Solids and Structures**, **39** (2002), 4151-4165.
52. C. Galeş, On Saint-Venant's problem in micropolar viscoelasticity, **Analele Ştiinţifice ale Universitatii "Al. I. Cuza" Iaşi**, **46** (2000), 131-148.

## B. Conference Proceedings

53. C. Galeş, On spatial behaviour in viscoelastic mixtures, **Proceedings of the Asian Conference on Mechanics of Functional Materials and Structures**, ACMFMS2008 (2008), 317-320.
54. M.A. Laino, A.R. Wilson, M. Vasile, R. Paoli, C. Gales, A Transport Network for In-Orbit Recycling Exploiting Natural Dynamics, **Proceedings of the International Astronautical Congress, IAC**, 2022-September, 2022, ISSN: 0074-1795

## C. PhD Thesis

*Initial boundary value problems in continuum mechanics.* Supervisor: Stan Chiriță. Examiners: Sanda Cleja-Țigoiu (University of Bucharest), Dorin Ieșan (A.I. Cuza University of Iași), Valeriu Sava (Gh. Asachi Technical University of Iași). Thesis defense: December 19, 2003, at A.I. Cuza University of Iași.

## D. Habilitation Thesis

Mathematical modelling in Celestial and Continuum Mechanics (2018)

## E. Book chapters and articles published in encyclopedias and dictionaries

1. C. Galeş, A cartographic study of the phase space of the elliptic restricted three body problem: Application to the Sun-Jupiter-Asteroid system, pp. 83-96, in **Nonlinear and Complex Dynamics. Applications in Physical, Biological and Financial Systems**, J. Machado & D. Baleanu & A. Luo (eds), Springer 2011.
2. C. Galeş, Continuous Dependence Results, vol. 2|C-D, pp. 714-721, In R. Hetnarski (ed.) **Encyclopedia of Thermal Stresses**, Springer, 2014.
3. C. Galeş, Hamilton-Kirchhoff Principle, vol. 5|H-K, pp. 2109-2114, In R. Hetnarski (ed.) **Encyclopedia of Thermal Stresses**, Springer, 2014.
4. C. Galeş, Nonlinear Thermoelastic Model, vol. 7|N-P, pp. 3377-3387, In R. Hetnarski (ed.) **Encyclopedia of Thermal Stresses**, Springer, 2014.
5. C. Galeş, Structural Stability in Linear Thermoelasticity, vol. 8|Q-S, pp. 4688-4694, In R. Hetnarski (ed.) **Encyclopedia of Thermal Stresses**, Springer, 2014.
6. C. Galeş, Uniqueness and Continuous Dependence Results in Nonlinear Thermoviscoelasticity , vol. 11|U-Z, pp. 6303-6311, In R. Hetnarski (ed.) **Encyclopedia of Thermal Stresses**, Springer, 2014.
7. A. Celletti, C. Gales, "Resonant dynamics of space debris", in **New Frontiers of Celestial Mechanics: Theory and Applications**, G. Bau, S. Di Ruzza, R.I. Paez, T. Penati, M. Sansottera eds., Springer PROMS, vol. 399, p. 239-267 (2023).
8. C. Florescu, L. Manea, E.I. Tamba, A.M. Bursuc, D. Butnaru, C.M. Carabus, M.M. Ciobanu, C. Gales, F.T. Olariu, C. Teodorescu, A.G. Azanfirei, **Terminologia astronomică românească științifică și populară. Fenomene, obiecte cosmice și constelații (TAFOC)**, Presa Universitara Clujeana, 841 pagini, 2023, ISBN 978-606-37-1924-0, <https://biblioteca.ubbcluj.ro/produs/terminologia-astronomica-romaneasca/>

## F. Edited books:

9. C. Beauge, A. Celletti, C. Gales, A. Lemaitre, Multi-scale (Time and Mass) Dynamics of Space Objects, **Proc. of the International Astronomical Union, Cambridge University Press**, Vol. 15, issue 364 (2022)
10. Baù G., Celletti A., Galeş C., Gronchi G.F., eds., Satellite Dynamics and Space Missions, **Springer, INDAM Series**, n. 34 (2019).