

SYLVIO FERRAZ-MELLO

0. DATA

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Born 26-Oct-1936 São Paulo, Brasil

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1. TITLES

B.S. (Physics), Univ. of São Paulo, 1959.

Specialist (Physics), Univ. of São Paulo, 1962.

Docteur d'Etat ès Sciences Mathématiques, Académie de Paris, 1967.

Full Professor, Aeronautics Institute of Technology, 1971.

Docent, Univ. of São Paulo, 1975.

Professor, Univ. of São Paulo, 1980.

Docteur Honoris Causa, Observatoire de Paris, 2007

Emeritus, Univ. of São Paulo, Institute of Astronomy, Geophysics and Atmospheric Sciences, 2007.

2. POSITIONS HELD

Faculty of Sciences, Univ. São Paulo, Dept. Physics 1960 - 1962.

Aeronautics Institute of Technology, São José dos Campos, 1967 - 1974.

Institute of Astronomy, Geophysics and Atmospheric Sciences – 1973 (formally retired, 1999;.Emeritus, 2007).

National Observatory, Rio de Janeiro 1999 - 2001.

3. VISITING POSITIONS

1962-1967 - Stagiaire Etranger, Bureau des Longitudes, Paris (France)

1972 - Lecturer, Dept. of Engineering Mechanics and Aerospace Engineering, University of Texas at Austin (USA)

1984 - Professor, Universidade do Porto (Portugal)

1985,1992 and 2007 - Gäst, Institut für Astronomie. Universität Wien (Austria)

1986 - Professeur Associé, Université Paris 7 (France)

1987, 1995 and 1998 - Profesor, Universidad Nacional de La Plata (Argentina)

1988 and 1993 - Professeur Visitant, Université Paris 7 (France)

1989 - Astronome, Observatoire de la Côte d'Azur - Nice (France)

1993 and 1997 - Professor de Disciplina de Pós-Graduação, Instituto de Física, USP.

1994 - Gästprofessor. Formal- und Naturwissenschaftliche Fakultät der Universität Wien (Austria)

1998 - Profesor Visitante, Universidad Nacional de Cordoba (Argentina).

2001 – Professeur Invité, Université Pierre et Marie Curie - Paris 6 (France)

2009 – Visiting Fellow. Isaac Newton Institute for Mathematical Sciences. University of Cambridge (UK)

4 GENERAL

BROUWER AWARD, American Astronomical Society, Division of Dynamical Astronomy, 2015
Honorary Editor, "Celestial Mechanics and Dynamical Astronomy", 2017-
Editor-in-chief, "Celestial Mechanics and Dynamical Astronomy" (a Springer-Nature journal of
Space Dynamics) 2001-2017.

Director, National Observatory, 1999 - 2001.

Director, Institute of Astronomy, Geophysics and Atmospheric Sciences, Univ. of São Paulo,
1981 - 1985.

Associate Editor – "Celestial Mechanics and Dynamical Astronomy", 1989 -2001.

International Editor - "Celestial Mechanics", 1981 -1988.

Editor – "Ciência e Cultura" (Journal of the Brazilian Society for the Advancement of Science)
1986 -1989.

Editorial Board member - "Vistas in Astronomy" (Pergamon Press, Oxford) 1993 – 1997.

Member, Brazilian Academy of Sciences

Member, Latin America Academy of Sciences (Council 1988-1996)

Member, TWAS - Academy of Sciences of the Developing World

Foreign Associate, Bureau des Longitudes (Paris).

Member, São Paulo State Academy of Sciences (President, 2009-2011)

Corresponding Member Real Academia de Ciências de Zaragoza

Order of Scientific Merit (Brazil) – Great Cross,

Asteroid name: (**5201**) Ferraz-Mello.

Chair: International Astronomical Union Symposium No. 152 (Angra dos Reis, 1991).

Co-Chair: International Astronomical Union Symposia No. 172 (Paris, 1995), No.
229 (Buzios, 2005), No. 249 (Suzhou, China, 2007), No. 263 (Rio de Janeiro,
2009) and Colloquium No. 172 (Namur, Belgium, 1998)

Chair: 6th, 7th and 8th Alexander von Humboldt Colloquium on Celestial Mechanics (Bad
Hofgastein, Austria, 2004, 2008 and 2011).

Co-Investigator. CoRoT space mission. 2009-2019

Member, International Astronomical Union (IAU)

Member, Steering Committee IAU Division of Fundamental Astronomy. 2013-2018

Member, Steering Committee IAU Division of Planetary Systems and Astrobiology
2018-2021

President. IAU Commission 7 (Celestial Mechanics) 1994 - 1997.

President. IAU Working Group "Orbits and Ephemerides of Planetary Satellites", 1976
- 1979.

Director. FUVEST (University Foundation for scholar aptitude tests) 1985 - 1989.

Adjoint (Exact Sciences and Engineering) to the Scientific Director of FAPESP (São
Paulo State Research Foundation) 1987 - 1994.

President. National Astronomy Commission. 1991 - 1994.

President. LCCA-USP (University Laboratory for High-performance Scientific
Computing) 1996 - 1998.

Member, Committee on Publication Ethics (COPE), 2010 -

Member, Organizing Committee, XX Brazilian Colloquium on Orbital Dynamics – 2021

Member, Scientific International Organising Committee of [the summer school a escola de verão "From Stardust to Extrasolar Planets: Dynamics of exoplanetary and solar system bodies". University of the Highlands & Islands, Sabhal Mor Ostaig, Gaelic College, Skye, Scotland. 2021

5. FELLOWSHIPS

Academic Dedication Fellowship, CAPES/Brazil Education Ministry, 1992-1995.

Visiting Fellow, University of Cambridge, Isaac Newton Institute of Mathematical Sciences, 2009

Research Fellow 1A, National Council of Scientific and Technological Development (CNPq), since 1990

6. BOOKS

1. S.Ferraz-Mello, Dynamics of the Galilean Satellites of Jupiter: An introductory treatise, IAG-USP, São Paulo, 1979.
Re-edição 2021: <http://www.astro.iag.usp.br/~sylvio/DGSX.pdf>
2. S.Ferraz-Mello, Escolha de Sítio para o Observatório Astrofísico Brasileiro, CNPq-Observatório Nacional, 1982.
3. S.Ferraz-Mello, Dinamika Galileevikh Sputnikov Yupitera. Vvodnii kurs, Izd-vo Mir, Moscow, 1983.
4. S.Ferraz-Mello, Canonical Perturbation Theories, Degenerate Systems and Resonance, Springer, Astrophysics and Space Science Library, Vol. 345 (ISBN-10:0-387-38900-8) xiv+341 pp. New York 2007.
5. S.Ferraz-Mello, C.Grotta-Ragazzo e L. Ruiz dos Santos Dissipative Forces in Celestial Mechanics, Sociedade Brasileira de Matemática (30º Colóquio Brasileiro de Matemática), Rio de Janeiro 2015.
6. S.Ferraz-Mello, Caos e Planetas. Dinâmica Caótica de Sistemas Planetários. Editora Livraria da Física (ISBN 978-65-5563-153-1) 230 pp. São Paulo 2021.

7. SOME SELECTED ARTICLES

1. S.Ferraz-Mello, Estimation of Periods from Unequally Spaced Observations, *Astronomical Journal*, **86**, 619-624 (1981) [**480+ citations**].
2. On the convergence domain of the Laplacian expansion of the disturbing function. *Celestial Mechanics and Dynamical Astronomy*, **58**, 37-52 (1993)
3. Kirkwood gaps and resonant groups (Invited Review Paper) *IAU Symposium 160. Asteroids, Comets, Meteors 1993* (A.Milani, M.Di Martino & A.Celino, eds.) Kluwer Acad. Publ. (Dordrecht, Holand) pp. 175-188 (1994)
4. A Symplectic Mapping approach to the study of the Stochasticity in Asteroidal Resonances. *Celestial Mechanics and Dynamical Astronomy*, **65**, 421-437 (1997).
5. On the asteroidal population of the first-order Jovian resonances. (D.Nesvorný & S.Ferraz-Mello) *Icarus*. **130**, 247-258 (1997).
6. Chaos, Diffusion, Escape and Permanence of Resonant Asteroids in Gaps and Groups. (S. Ferraz-Mello, D. Nesvorný, & T.A.Michtchenko) In *Solar System Formation and Evolution* (D.Lazzaro et al. eds.), Astron. Soc. Pacific, San Francisco, 65-82 (1998).
7. 6. S.Ferraz-Mello, Caos no Sistema Solar; In preparation, 2020.
8. Frequency Map Analysis of the orbital structure in elliptical galaxies (F.C.Wachlin & S.Ferraz-Mello) *Monthly Notices of the Royal Astronomical Society*, **298**, 22-32 (1998).

9. Slow and Fast Diffusion in Asteroidal-Belt Resonances. A Review. *Celestial Mechanics and Dynamical Astronomy* **73**, 25-37 (1999).
10. Extrasolar Planets in Mean-motion Resonance (C. Beaugé, S. Ferraz-Mello & T.A. Michtchenko) *Astrophysical Journal*, 593, 1124-1133 (2003) [**180 citations**].
11. Extrasolar Planetary Systems (S.Ferraz-Mello, T.A.Michtchenko, C. Beaugé and N. Callegari Jr. In *Chaos and Stability in Extrasolar Planetary Systems* (R. Dvorak et al. eds.) *Lecture Notes in Physics*, Springer (2005)
12. Reliability of orbital fits for resonant Extrasolar Planetary Systems: The case of HD 82943 (C.Beaugé, C.A.Giuppone, S. Ferraz-Mello and T.A.Michtchenko) *Monthly Notices of the Royal Astronomical Society*, **385**, 2151-2160 (2008)
13. Tidal Friction in close-in satellites and exoplanets. The Darwin theory revisited. (S. Ferraz-Mello, A. Rodríguez & H. Hussmann) *Celestial Mechanics and Dynamical Astronomy* **101** 171-201 (2008) (astro-ph/0712.1156) [**220+ citations**].
14. Physical and Dynamical characterization of object (5201) Ferraz-Mello – A possible extinct Jupiter family comet. (M.J.Carvano, D. Lazzaro and S.Ferraz-Mello) *Astronomy and Astrophysics* **489**, 811-817 (2008)
15. Transiting exoplanets from the CoRoT space mission: VIII- CoRoT-7b the first super-Earth with measured radius (A.Léger et al.) *Astronomy and Astrophysics*. **506**, 287-302 (2009) [**660+ citations**].
16. The CoRoT-7 planetary system: two orbiting super-Earths (Didier Queloz et al. –*Astronomy and Astrophysics*. **506**, 303-319. (2009) [**460+ citations**].
17. A transiting giant planet with a temperature between 250 K and 430 K (H.J. Deeg et al.; CoRoT Exoplanets Science Team) *Nature*, **464**, 384-387 (2010)
18. Detectability and Error Estimation in Orbital Fits of Resonant Extrasolar Planets (C.A.Giuppone, M. Tadeu dos Santos, C. Beaugé, S. Ferraz-Mello and T. A. Michtchenko), *Astrophysical Journal* **699**, 1321-1332 (2010)
19. On planetary mass determination in the case of super-Earths orbiting active stars. The case of the CoRoT-7 system (S. Ferraz-Mello, M. Tadeu dos Santos C. Beaugé, T.A.Michtchenko and A. Rodríguez). ArXiv: 1011.2144v2 (2011)
19. Tidal synchronization of close-in satellites and exoplanets. A rheophysical approach (S.Ferraz-Mello), *Celestial Mechanics and Dynamical Astronomy*, **116**, 109-140. ArXiv: 1204.3957v3 (2013)
20. Interplay of tidal evolution and wind braking in the rotation of exoplanets host stars. (S.Ferraz-Mello et al) *Astrophysical Journal*, **807**, Id.78 (2015)
21. Tidal evolution of CoRoT close-in massive companions and their host stars. (S. Ferraz-Mello). In: *The CoRoT Legacy Book*. A.Baglin, ed. EDP Sciences, (2016) p.169.
22. Tidal evolution of exoplanetary systems hosting Potentially Habitable Exoplanets. The cases of LHS-1140 c-b and K2-18 c-b (G.O.Gomes & S. Ferraz-Mello) *Monthly Notices of the Roy. Astron. Soc.* **494**, 5082-5090 (2020)
23. Tidal friction in satellites and planets. The new version of the creep tide theory. (S. Ferraz-Mello, C.Beaugé, H.Folonier, G.O.Gomes) *European Journal of Physics ST*, **229**, 1441-1462 (2020)

Full list: <https://scholar.google.com.br/citations?user=W4SdTKkAAAAJ&hl=pt-BR&oi=sra>

8. PUBLICATION STATISTICS

Books published in Brazil:	4
Books published abroad:	2
Books edited in Brazil	2
Books edited abroad:	11
Papers in referred journals	140
Papers in Proceedings and Book Chapters	88
Others	8

9. THESES SUPERVISION – Summary

University of São Paulo	Ph.D. 19	M.Sc. 7
Aeronautics Institute of Technology :	Ph.D. 3	M.Sc. 15
National Observatory (CNPq)	Ph.D. 1	M.Sc. 1
University of Paris (Paris 6)	Dr d'État: 1	

Date: June 15, 2020