

GABRIEL TEIXEIRA GUIMARÃES

EDUCATION

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Ph.D Student - Graduate Institute for Advanced Studies - SOKENDAI Project: Theoretical study of planetary dynamics. Supervisor: Eiichiro Kokubo Scholarship: MEXT - Monbukagakusho	<i>2023-Present</i>
Research Student - The University of Tokyo - UTokyo Scholarship: MEXT - Monbukagakusho	<i>2023-2024</i>
MSc in Astronomy - University of São Paulo - USP Thesis: <i>Study of methods for detecting and measuring chaotic diffusion in dynamical systems.</i> Supervisor: Tatiana Alexandrovna Michtchenko Scholarship: CAPES - Coordination for the Improvement of Higher Education Personnel	<i>2020-2023</i>
Bsc in Physics - University of São Paulo - USP	<i>2018 - 2019</i>
Bsc in Astronomy - University of São Paulo - USP Thesis 1: <i>Chaos in Nonlinear Dynamical Systems: Evolution and Detection</i> Thesis 2: <i>Chaos in Nonlinear Dynamical Systems: Frequency and Lyapunov Analysis; Web of Resonances</i> Supervisor: Tatiana Alexandrovna Michtchenko Scholarship: CNPq - National Council for Scientific and Technological Development	<i>2012 - 2018</i>

RESEARCH EXPERIENCE

National Astronomical Observatory of Japan — NAOJ <i>Associate Researcher</i> Theoretical and numerical exploration of dynamical aspects of compact planetary systems.	<i>2023-Present</i>
<i>Research Intern</i> Stability study of compact planetary systems.	<i>2023-2024</i>
Institute of Astronomy, Geophysics and Atmospheric Sciences — IAG-USP <i>Master's Student</i> Orbit integration, study of chaotic phenomena in the Frequency Space (Wavelet and Fourier analysis) and in the Action Space (Lyapunov Exponents and Shannon Entropy).	<i>2020-2023</i>
<i>Undergraduate research student</i> Introduction to non-linear dynamical systems and chaos detection tools.	<i>2017-2018</i>

WORK EXPERIENCE

FieldPRO <i>Data Scientist</i>	<i>2022-2023</i>
Municipal Secretary of Innovation and Technology - SMIT <i>Data Analyst</i>	<i>2018-2020</i>
Institute of Astronomy, Geophysics and Atmospheric Sciences — IAG-USP <i>Internship</i> Supervisor: Jacques Lépine Maintenance of the Support Nucleus of Research in Radio Astronomy website and data processing for the Open Cluster Database	<i>2013-2014</i>

TOPICS OF INTEREST

Chaotic Detection Tools, Secular Evolution of Celestial Bodies, Resonant Dynamics, Three Body Problem, Chaotic Motion in the Solar System, Galactic Dynamics, Exoplanets, Dynamical History of the Solar System, History of Science.

PEER-REVIEWED PAPERS PUBLISHED

1. **Guimarães, G. T., Michtchenko, T. A., Chaotic diffusion in the action and frequency domains: estimate of instability times.** *The European Physical Journal Special Topics*.
<https://doi.org/10.1140/epjs/s11734-023-01017-x>

PAPERS PUBLISHED IN CONFERENCE PROCEEDINGS

1. **Guimarães, G. T., Michtchenko, T. A., Chaotic diffusion in the action and frequency domains: estimate of instability times.** *Proceedings of the XLV Annual Meeting of the Brazilian Astronomical Society, 2022*
<https://sab-astro.org.br/sab/publicacoes/boletim-da-sab-vol-34/>

ABSTRACTS PUBLISHED IN CONFERENCE PROCEEDINGS

1. **Guimarães, G. T., Michtchenko, T. A., Chaotic diffusion in the action and frequency domains: estimate of instability times.** *Book of proceedings of the 21th Brazilian Colloquium on Orbital Dynamics - XXI CBDO, 2022*
2. **Guimarães, G. T., Michtchenko, T. A., Chaotic diffusion in the action and frequency domains.** *Book of Proceedings of the XLV Annual Meeting of the Brazilian Astronomical Society, 2022*
3. **Guimarães, G. T., Michtchenko, T. A., Methods of detection of chaotic diffusion in dynamical systems.** *Resúmenes de Presentaciones en Poster at the XI Taller De Ciencias Planetarias, 2022*
4. **Guimarães, G. T., Michtchenko, T. A., Methods of detection of chaotic diffusion in dynamical systems.** *Book of proceedings of the 20th Brazilian Colloquium on Orbital Dynamics - XX CBDO, 2021*
5. **Guimarães, G. T., Michtchenko, T. A., Methods of detection of chaotic diffusion in dynamical systems.** *Book of proceedings of the XLIV Annual Meeting of the Brazilian Astronomical Society - SAB, 2021*
6. **Guimarães, G. T., Michtchenko, T. A., Chaos in Nonlinear Dynamical Systems: Frequency analysis; diffusion timescales.** *Book of proceedings of the 19th Brazilian Colloquium on Orbital Dynamics - XIX CBDO, 2018*
7. **Guimarães, G. T., Michtchenko, T. A., Nyquist Frequency, Chaos Detection and Orbit Determination** *SPANet Workshop on Time Series in Astronomy, 2018*
8. **Guimarães, G. T., Michtchenko, T. A., Chaos in the Dynamical Systems: Lyapunov and Frequency Analysis; Diffusion Timescales** *26th International Symposium on Scientific and Technological Initiation at USP, 2018*

SELECTED TALKS

1. Oral Presentation at the 21th Brazilian Colloquium on Orbital Dynamics - XXI CBDO, 2022: **Chaotic diffusion in the action and frequency domains: estimate of instability times.**
2. Poster Presentation at the XLV Annual Meeting of the Brazilian Astronomical Society - SAB, 2022: **Chaotic diffusion in the action and frequency domains.**
3. Oral Presentation at the XI Taller De Ciencias Planetarias, 2022: **Methods of detection of chaotic diffusion in dynamical systems.**
4. Poster Presentation at the 20th Brazilian Colloquium on Orbital Dynamics - XX CBDO, 2021: **Methods of detection of chaotic diffusion in dynamical systems.**
5. Poster Presentation at the XLIV Annual Meeting of the Brazilian Astronomical Society - SAB, 2021: **Methods of detection of chaotic diffusion in dynamical systems.**
6. Poster presentation at the 19th Brazilian Colloquium on Orbital Dynamics - XIX CBDO, 2018: **Chaos in Non-linear Dynamical Systems: Frequency analysis; diffusion timescales.**
7. Poster presentation at the SPANET Workshop on Time Series in Astronomy, 2018: **Nyquist Frequency, Chaos Detection and Orbit Determination.**

OUTREACH PUBLICATIONS

1. **Guimarães, G. T.**, A busca por jovens planetas [**The search for young planets**], Boletim Dia e Noite com as Estrelas, June/2022
2. **Guimarães, G. T.**, Editorial, Boletim Dia e Noite com as Estrelas, February/2022
3. **Guimarães, G. T.**, Touchdown extraterrestre [**Extraterrestrial touchdown**], Boletim Dia e Noite com as Estrelas, January/2022
4. **Guimarães, G. T.**, Lacunas no tempo [**Gaps in time**], Boletim Dia e Noite com as Estrelas, October/2021
5. **Guimarães, G. T.**, A descoberta de um gigante [**The discovery of a giant**], Boletim Dia e Noite com as Estrelas, August/2021
6. **Guimarães, G. T.**, Só mais uma galáxia? [**Just another galaxy?**], Boletim Dia e Noite com as Estrelas, June/2021
7. **Guimarães, G. T.**, Um novo núcleo da terra? [**A new earth core?**], Boletim Dia e Noite com as Estrelas, April/2021
8. **Guimarães, G. T.**, Editorial, Boletim Dia e Noite com as Estrelas, April/2021
9. **Guimarães, G. T.**, Aglomerações estelares [**Stellar crowds**], Boletim Dia e Noite com as Estrelas, February/2021
10. **Guimarães, G. T.**, Editorial, Boletim Dia e Noite com as Estrelas, February/2021
11. **Guimarães, G. T.**, Missão espacial gaia: uma nova era da astronomia [**Saia space mission: a new era of astronomy**], Boletim Dia e Noite com as Estrelas, January/2021
12. **Guimarães, G. T.**, Sondas espaciais retornam à terra [**Space probes return to earth**], Boletim Dia e Noite com as Estrelas, January/2021

Boletim Dia e Noite Com as Estrelas [**“Day and Night With the Stars” Newsletter**], https://www.iag.usp.br/astrofisica/boletim_dnce

LANGUAGE SKILLS

	Portuguese: Mother-tongue			
	Listening	Reading	Speaking	Writing
English:	Fluent	Fluent	Fluent	Fluent
German:	Limited	Fluent	Limited	Functional
Spanish:	Limited	Fluent	Functional	Functional
Mandarin:	Basic	Basic	Limited	Limited