Anne Viegas Rathsam

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Research Interests

(a) FGK stars: stellar parameters, chemical composition, age, mass, evolution, planets
(b) Spectral analysis, spectral synthesis
(c) Chemical evolution of the Milky Way, stellar clusters, chemical tagging

Education

University of São Paulo 03/2022 – Present
Ph.D. in Astronomy *São Paulo, Brazil*
Thesis: Lithium in open clusters and field stars

University of São Paulo 03/2018 – 12/2021
B.Sc. in Astronomy *São Paulo, Brazil*
Dissertation: Lithium depletion in low-mass stars

Publications

2 first–author and 3 co–author papers.
H-index: 3

Refereed publications:

5. Carvalho Silva, G.; Meléndez, J.; **Rathsam, A.**; Shejeelammal, J.; Martos, G. Lorenzo-Oliveira, D.; Spina, L.; Ribeiro Alves, D., 2025, ApJL, vol. 983, p. L31, ADS link
A new age–activity relation for solar analogs that accounts for metallicity

4. **Rathsam, A.**; Meléndez, J.; Karakas, A. I., 2025, A&A, vol. 693, p. A26, ADS link
Beryllium: The smoking gun of a rejuvenated star

3. Shejeelammal, J.; Meléndez, J.; **Rathsam, A.**; Martos, G., 2024, A&A, vol. 690, p. A107, ADS link
The [Y/Mg] chemical clock in the Galactic disk: The influence of metallicity and the Galactic population in the solar neighbourhood

2. **Rathsam, A.**; Meléndez, J.; Carvalho Silva, G., 2023, MNRAS, vol. 525, p. 4642, ADS link
Lithium depletion in solar analogs: age and mass effects

1. Martos, G.; Meléndez, J.; **Rathsam, A.**; Carvalho Silva, G., 2023, MNRAS, vol. 522, p. 3217, ADS link
Metallicity and age effects on lithium depletion in solar analogues

Research experience

Ph.D. researcher 03/2022 – Present
Lithium in field stars and open clusters
Advisor: Jorge Luis Meléndez Moreno, Ph.D.
Abstract: We aim to evaluate the relationship between lithium abundance and many stellar parameters in a sample of around 200 field solar analogs and 18 solar twins from old open clusters. The results will be valuable for the study of transport mechanisms in stars and models of stellar interiors.

Undergraduate research assistant 03/2021 – 12/2021

Lithium depletion in low-mass stars

Advisor: Jorge Luis Meléndez Moreno, Ph.D.

Abstract: We examined the presence of lithium in stars less massive than the Sun, evaluating the destruction of this element inside cool stars due to the deepening of the convective zone in low-mass stars.

Undergraduate research assistant 10/2019 – 11/2020

A new sample for the search of habitable planets

Advisor: Jorge Luis Meléndez Moreno, Ph.D.

Abstract: Our goal was to determine which stellar types are more suitable for studies towards detecting potentially habitable planets, considering the equipment we have available today. Based on these results, we selected stars that fit our criteria and characterized them based on their stellar parameters, adopting the spectroscopic method.

Teaching experience

Teaching assistant: AGA0100 - Introduction to Astronomy I 03/2023 – 07/2023

Teaching Improvement Program at IAG/USP

Elaboration of teaching material and offering of practical/computational activities.

Fellowships

5. FAPESP Ph.D. Research Fellow at IAG/USP – Brazil 10/2023 - Present
   Process no. 2023/07617-5
4. CAPES/PROEX Ph.D. Research Fellow at IAG/USP – Brazil 03/2023 – 09/2023
   Process no. 88887.823858/2023-00
3. CAPES/PROEX M.Sc. Research Fellow at IAG/USP – Brazil 04/2022 – 02/2023
   Process no. 88887.684392/2022-00
2. FAPESP Undergraduate Research Assistant Fellow at USP – Brazil 03/2021 – 12/2021
   Process no. 2020/15789-2
1. FAPESP Undergraduate Research Assistant Fellow at USP – Brazil 10/2019 – 12/2020
   Process no. 2019/19208-7

Conference presentations & posters

16. XLVIII Annual Meeting of the Brazilian Astronomical Society, Caxambu, Brazil 09/2025
    Assessing the planet engulfment hypothesis in a chemically anomalous binary pair (talk)
15. X IAG Science Day, São Paulo, Brazil 09/2025
    Assessing the planet engulfment hypothesis in a chemically anomalous binary pair (flash talk)
14. Between The Lines: a Stellar Spectroscopy Workshop, Santiago, Chile 12/2024
    High-precision stellar chemical analysis: methods and applications (flash talk & poster)
13. IAU Symposium 395: Stellar populations in the Milky Way and beyond, Paraty, Brazil 11/2024
    Rejuvenated through a merger: beryllium abundance in the ancient star HD 65907 (poster)
12. XLVII Annual Meeting of the Brazilian Astronomical Society, Águas de Lindóia, Brazil 09/2024
    Lithium depletion in solar-type stars (talk)
11. IX IAG Science Day, São Paulo, Brazil 09/2024
    Beryllium: the smoking gun of the rejuvenated star HD 65907 (flash talk)

10. XVII Latin American Regional IAU Meeting, Montevideo, Uruguay 11/2023
Lithium depletion in solar analogs: age, mass, and planet effects (talk)

9. XLVI Annual Meeting of the Brazilian Astronomical Society, Rio de Janeiro, Brazil 10/2023
Lithium depletion in solar analogs: age, mass, and planet effects (poster)

8. Spectral Fidelity, Florence, Italy 09/2023
Lithium depletion in solar analogs: age, mass, and planet effects (talk)

7. exoLaTam22 (workshop) 12/2022
Lithium depletion in solar analogs (flash talk)

6. VII IAG Science Day (virtual), Brazil 11/2022
Lithium depletion in solar analogs (flash talk)

5. XLV Annual Meeting of the Brazilian Astronomical Society (virtual), Brazil 09/2022
Lithium depletion in solar analogs: age and mass effects (poster)

4. 29° USP International Symposium of Undergraduate Research (virtual), Brazil 10/2021
Lithium depletion in low-mass stars (flash talk)

3. XLIV Annual Meeting of the Brazilian Astronomical Society (virtual), Brazil 09/2021
Lithium depletion in low-mass stars (poster)

2. 28° USP International Symposium of Undergraduate Research (virtual), Brazil 10/2020
A new sample for the search of habitable planets (flash talk)

1. 27° USP International Symposium of Undergraduate Research, São Paulo, Brazil 09/2019
What types of stars to study in the search of a habitable Earth? (poster)

Conference organization

2. IAU Symposium 395: Stellar populations in the Milky Way and beyond, Paraty, Brazil 11/2024
LOC Member

1. Practical Precision Spectroscopy Workshop, São Paulo, Brazil 01/2023
LOC Member

Granted observing time

4. MAROON-X/Gemini South 11.5 hours (Band 1)
PI: Rathsam, A
Queue mode

3. MAROON-X/Gemini South 14.4 hours (Band 3)
PI: Rathsam, A
Queue mode

2. HDS/Subaru (via Gemini exchange program) 1 night
PI: Meléndez, J
Remote observation

1. UVES/VLT-ESO 5.2 hours
PI: Rathsam, A
Queue mode

Outreach

Astronomical service for schools 04/2024 - present

Service offered by IAG/USP to schools every Tuesday and Thursday, with the goal of scientific outreach to elementary and high school students. Each service consists of the transmission of a previously recorded talk on astronomy topics followed by a live Q&A.

Complementary information

Languages

1. Portuguese: native
2. English (advanced): understands/reads/writes/speaks well. Scored 106/120 on TOEFL iBT (07/2021).

Skills

1. Programming: LaTeX, Python (5+ years); little experience with C++, bash and parallel programming (MPI)
2. Databases & softwares: IRAF, q^2, MOOG

Last update: October 12, 2025