Alexander Stone-Martinez

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Astro-Rabbit
http://example.example.org/

Research Interest

My research focus is on leveraging various **machine learning** techniques to study large astronomical datasets, such as **spectroscopy** from the Sloan Digital Sky Survey (SDSS), **asterosiesmology** from the Kepler and TESS missions, and **astrometry** from Gaia. In particular, I am interested in determining **stellar ages** from chemical abundances, calibrated with Asterosiesmology, and then applied with SDSS and Gaia data to study **galactic archaeology**.

Education

2019 – 2025 Expected — **Ph.D., New Mexico State University (NMSU)** in Astronomy.

2015 – 2019 — **B.S., Embry-Riddle Aeronautical University (ERAU)** in Astronomy & Astrophysics.

Professional Activities

2023 – Present — **Data Inspector** Sloan Digital Sky Survey (SDSS).
Performed daily inspections of data coming in from the telescopes reduction pipelines.

2019 – Present — **Graduate Research Assistant** Department of Astronomy, New Mexico State University.
Working on my current research focus of stellar ages, asteroseismology, and galactic archaeology.

2016 – 2019 — **Undergraduate Research Assistant.** Department of Physical Sciences, Embry-Riddle Aeronautical University.
Used Kepler K2 Data to study the effectiveness of gyro-chronology to determine the age of main sequence stars.

Teaching

2022-2023 **NMSU, Head Teaching Assistant**
Assisted all teaching assistant's with managing their labs. Helped manage lab storeroom. Managed campus observatory and for undergrad lab classes.

2019-2022 **NMSU, Teaching Assistant**
Astr 110: Conducted undergrad astronomy lab classes. Graded homework assignments and tests.

Research Publications

Journal Articles

1. **A. Stone-Martinez**, J. A. Holtzman, J. Imig, C. Nitschelm, K. G. Stassun, and J. R. Brownstein, "Spectroscopic Distance, Mass, and Age Estimations for APOGEE DR17,", vol. 167, no. 2, 73, p. 73, Feb. 2024. DOI: 10.3847/1538-3881/ad12a6. arXiv: 2311.17887 [astro-ph.SR].

2. J. Imig, C. Price, J. A. Holtzman, **A. Stone-Martinez**, *et al.*, "A Tale of Two Disks: Mapping the Milky Way with the Final Data Release of APOGEE,", vol. 954, no. 2, 124, p. 124, Sep. 2023. DOI: 10.3847/1538-4357/ace9b8. arXiv: 2307.13887 [astro-ph.GA].

3. Abdurro'uf, K. Accetta, C. Aerts, V. Silva Aguirre, *et al.*, "The Seventeenth Data Release of the Sloan Digital Sky Surveys: Complete Release of MaNGA, MaStar, and APOGEE-2 Data,", vol. 259, no. 2, 35, p. 35, Apr. 2022. DOI: 10.3847/1538-4365/ac4414. arXiv: 2112.02026 [astro-ph.GA].
4. T. Otani, T. von Hippel, D. Buzasi, T. D. Oswalt, **A. Stone-Martinez**, and P. Majewski, "A Monte Carlo Method for Evaluating Empirical Gyrochronology Models and Its Application to Wide Binary Benchmarks,", vol. 930, no. 1, 36, p. 36, May 2022. DOI: 10.3847/1538-4357/ac6035. arXiv: 2105.07266 [astro-ph.SR].

Conference Proceedings

1. **A. Stone-Martinez** and J. Holtzman, "Stellar ages from APOGEE parameters," in *Proceedings of the 7th TASC and the 14th KASC Workshop*, Poster presented at TASC7/KASC14, Jul. 2023.
2. **A. Stone-Martinez** and J. Holtzman, "Parameter based distances and masses using simple neural nets," in *Proceedings of the 6th TASC and the 13th KASC Workshop*, Poster presented at TASC6/KASC13, Jul. 2022.
3. **A. Stone-Martinez** and J. Holtzman, "Parameter based distances and masses using simple neural nets," in *American Astronomical Society Meeting #240*, ser. American Astronomical Society Meeting Abstracts, Talk presented at AAS 240, vol. 54, Jun. 2022, 426.06, p. 426.06.
4. B. Stemock, C. Churchill, S. Hassan, C. Doughty, *et al.*, "Using Artificial Intelligence to Understand Fundamental CGM and IGM Physics," in *The 35th Annual New Mexico Symposium*, A. D. Kapinska, Ed., Feb. 2020, p. 8.
5. **A. Stone-Martinez**, G. Villarroel, P. Majewski, T. Otani, T. Oswalt, and A. McNaughton, "Gyrochronology of Wide Binaries in the Kepler K2," in *American Astronomical Society Meeting Abstracts #231*, ser. American Astronomical Society Meeting Abstracts, vol. 231, Jan. 2018, 450.08, p. 450.08.

Outreach & Engagement

Virtual Reality Outreach	**2020 – Present** Developed and conducted virtual astronomy sessions using VRChat during the COVID-19 pandemic, adapting traditional outreach methods to virtual platforms to continue public engagement and education in astronomy.
NMSU Graduate Outreach	**80+ hrs** including public talks (e.g. Astronomy on Tap), grade school events, and department observatory outreach.
ERAU Society of Physics Students	**Chapter President 2017-2019** Organized and engaged in community service, ran physics education outreach at department open houses
ERAU Amateur Astronomy Club	**Vice President 2016-2017** Organized star parties, taught members how to use various telescopes
ERAU Undergraduate Outreach	**120+ hrs** Public outreach at grade school events, local community events, and department open houses.
iSpace Outreach	**Summer 2017** Volunteer for K-12 robotics summer camp

Skills

Languages	Strong reading, writing and speaking competencies for English. Elementary proficiency in Spanish (currently enhancing) and German.
Coding	Python, MATLAB, Julia, LaTeX, LabVIEW

Skills (continued)

Software	Tensorflow, PyTorch, IRAF, MESA, Git, SLURM, Unity, Blender
Observation	Trained on ERAU 1-m telescope, SARA 1-m telescopes, and the Apache Point Observatory 3.5-m telescope. Image reduction. Spectral extraction. Operation of small $\approx 200mm$ guided telescopes for outreach. Operation of manual dobsonian style telescopes for outreach.
Misc.	Communication, debugging, team orientation, troubleshooting, teaching, data analysis, science outreach

Miscellaneous Experience

Awards and Achievements

2021 **HED GRADUATE SCHOLARSHIP**, New Mexico State University

2019 **William Webber Voyager Graduate Fellowship**, New Mexico State University

2015 **Deans Scholarship**, Embry-Riddle Aeronautical University

Certification

2021 **Student Pilot License**. Issued by FAA. Expected completion [2024]

2020 **HAM Radio License**. Technician class. Issued by FCC.