

# OANA VESA

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Sunnyvale, California

## EDUCATION

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**Ph.D. Candidate in Astronomy, New Mexico State University** Expected 2024  
**Working Thesis Title:** *Harnessing the Untapped Potential of Atmospheric Gravity Waves and Chromospheric Swirls to Map Out the Solar Atmosphere*  
**Thesis Committee:** Juie Shetye, Jason Jackiewicz, Jon Holtzman, Laura Boucheron

**B.A. in Physics & Mathematics with Honors, Albion College** 05/2018  
*Prentiss M. Brown Honors Program*  
**Thesis Title:** *Analysis of the Gaia RVS Region in ESPaDOnS Spectra of Asteroseismic Calibration Stars*  
**Advisor:** Nicolle Zellner

## RESEARCH INTERESTS

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High-resolution, multi-height observations from multiple viewing angles to characterize oscillatory and vortex flows in the lower solar atmosphere.

- Atmospheric Gravity Waves – Characterization of their behavior and potential as atmospheric diagnostics – Theory and observations
- Small-scale Vortex Flows (Chromospheric Swirls) – Characterization of their formation, evolution, and role in transferring energy and mass – Theory and observations

## REFEREED PUBLICATIONS

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[Multiheight Observations of Atmospheric Gravity Waves at Solar Disk Center](#)  
**Vesa, O.**, Jackiewicz, J., and Readorn, K., The Astrophysical Journal, Volume 952, Issue 1, article id. 58, 18 pp. (07/2023)

## AWARDS, HONORS AND GRANTS

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[The Dr. Barry Neil Rappaport Endowed Memorial Scholarship](#) 2023  
*“...recognition of an exceptional record of public outreach and service or for an exceptional completed research project in observational astronomy which demonstrates excellence and breadth.”*

Co-I on Nationwide Eclipse Ballooning Project (NEBP) for New Mexico State University 2022  
*PI: Juie Shetye; Atmospheric Science Track Team*

[A. Scott Murrell Memorial Endowed Scholarship Fund](#) 2022  
*“...Recognizes outstanding research or professional development, and related accomplishments that raise the visibility of the NMSU Astronomy Department”*

New Mexico Space Grant Consortium Graduate Research Fellowship 2021, 2022  
*“Harnessing the Untapped Potential of the Solar Tornadoes”; awarded \$10,000*

## IN THE NEWS

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- Santa Fe New Mexican Article. [NMSU Researchers Shine Light on Solar Tornadoes](#) 06/17/2023
- NMSU Press Release. [NMSU Researchers Study Solar Tornadoes' Impact, News Conference in Albuquerque June 5](#) 06/01/2023
- Las Cruces Sun News Article. [NMSU Team to Use Hot-air Balloons to Study Solar Effects Amid Eclipses](#) 12/05/2022

## INVITED AND PRESS TALKS

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- Press Talk for the 242<sup>nd</sup> American Astronomical Society Meeting in Albuquerque, New Mexico 06/2023  
Title: *Characterizing Tornadoes on the Sun*
- Albion College Mathematics & Computer Science Department Colloquium Series 04/2021  
Title: *"Atmospheric Gravity Waves in the Magnetized Solar Atmosphere"*
- Preparing for DKIST: Image Processing and Time Series Workshop held at California State University, Northridge 01/2020  
Title: *"Gravity Waves in the Photosphere"*

## CONFERENCE PRESENTATIONS

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- Podium Talk. 54<sup>th</sup> Solar Physics Division Meeting 08/2023  
Title: *"Unlocking the Secrets of Atmospheric Gravity Waves on the Quiet Sun: Observational Insights"*
- Poster Presentation. 54<sup>th</sup> Solar Physics Division Meeting 08/2023  
Title: *"Characterization of Chromospheric Swirls on the Quiet Sun"*
- IPoster Presentation. 242<sup>nd</sup> American Astronomical Society Meeting 06/2023  
Title: *"Characterization of Chromospheric Swirls on the Quiet Sun"*
- Virtual Talk. Joint Scientific Assembly IAGA-IASPEI 08/2021  
Title: *"Atmospheric Gravity Waves in the Magnetized Lower Solar Atmosphere"*
- Virtual Talk. 36<sup>th</sup> Annual New Mexico Symposium 11/2020  
Title: *"The Propagation of Atmospheric Gravity Waves in the Magnetic Solar Atmosphere"*
- IPoster Presentation. 51<sup>st</sup> Solar Physics Division Meeting 08/2020  
Title: *"Atmospheric Gravity Waves in the Magnetized Solar Atmosphere"*
- Podium Talk. 29<sup>th</sup> Annual Elkin R. Isaac Student Research Symposium 04/2018  
Title: *"Analysis of the Gaia RVS Region in ESPaDOnS Spectra of Asteroseismic Calibration Stars"*
- Poster Presentation. 231<sup>st</sup> American Astronomical Society Meeting 01/2018  
Title: *"Analysis of the Gaia RVS Region in ESPaDOnS Spectra of Asteroseismic Calibration Stars"*
- Poster Presentation. 229<sup>th</sup> American Astronomical Society Meeting 01/2017  
Title: *"The Evolution of Starspots on LO Pegasi"*

## RESEARCH EXPERIENCE

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NSF REU Intern, University of Hawai'i-Manoa	Summer 2017
Topic: <i>Analyzing the Gaia RVS Region in ESPaDOnS Spectra</i>	
Advisors: Daniel Huber, Eric Gaidos	
NSF REU Intern, Ohio Wesleyan University	Summer 2016
Topic: <i>Analysis of starspots on the young solar analog LO Pegasi</i>	
Advisor: Robert Harmon	
Summer Research Assistant, Albion College	Summer 2015
Topic: <i>Analysis of the chemical composition and ages of lunar impact glass samples from Apollo 14, 16, and 17 sites</i>	
Advisor: Nicolle Zellner	

## TEACHING AND MENTORING EXPERIENCE

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Co-Instructor with Juie Shetye for ASTR 400: Undergrad Research	03/2023
<i>Developed course material and lectured for three classes about Earth-based atmospheric gravity waves and their connection to solar eclipses</i>	
Graduate Student Mentor for the Astronomy Department's Undergraduate Mentoring Program for Astronomy Minors	08/2021 – 08/2022
Graduate Teaching Assistant for ASTR 110: Introduction to Astronomy	08/2018 – 05/2019
Undergraduate Teaching Assistant for PHYS 245: Electronics	08/2016 – 12/2016
Albion College Mathematics Tutor	01/2016 – 05/2018
Albion College Physics Peer Mentor	08/2015 – 05/2018

## LEADERSHIP AND SERVICE

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Vice-President of the NMSU Astronomy Graduate Student Organization	08/2020 – 08/2023
Graduate Student Outreach Coordinator for the Astronomy Department	08/2020 – 08/2023
<a href="#">Letters to a Pre-Scientist (LPS)</a> Pen Pal Volunteer	08/2020 – 08/2023

## OBSERVING EXPERIENCE

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Dunn Solar Telescope (ROSA, FIRS)	2022
Dunn Solar Telescope (IBIS, ROSA)	2019

## WORKSHOPS AND SUMMER SCHOOLS

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Preparing for DKIST: He I Diagnostics in the Solar Atmosphere Workshop	02/2022
Preparing for DKIST: An Introduction to Chromospheric Diagnostics Workshop	07/2021
Pennsylvania State University's Center for Astrostatistics: Summer School in Statistics for Astronomers XVI	06/2021
Preparing for DKIST: Milne-Eddington Spectro-polarimetric Inversions Workshop	07/2020
Preparing for DKIST: Image Processing and Time Series Workshop	01/2020
Preparing for DKIST: An Introduction to Ground-based Data Workshop	06/2019
DKIST Critical Science Plan Workshop on Wave Generation and Propagation	12/2018

## RELEVANT SKILLS

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<b>Programming</b>	Proficient in Python and IDL; Some experience in Fortran, MATLAB, R, and Perl
<b>Data Reduction</b>	Substantial experience in narrowband and broadband data reduction for ground-based instruments
<b>Languages</b>	English (native), Romanian (native), Spanish (beginner)