

# OANA VESA

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Sunnyvale, California

## EDUCATION

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**Ph.D. 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:** Jason Jackiewicz, Juie Shetye, 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-wavelength observations to investigate oscillatory motions and vortex flows in the lower solar atmosphere.

- Atmospheric Gravity Waves – Characterization of their behavior and potential as atmospheric/magnetic field 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)

## PAPERS IN PREPARATION

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Morphological Analysis of Chromospheric Swirls Observed in DST Data

**Vesa, O.** and Shetye, J., *under review at The Astrophysical Journal* (02/14/23).

Multi-Height Observations of Atmospheric Gravity Waves Away from Disk Center

**Vesa, O.**, Morales, J., and Jackiewicz, J., *in preparation*.

## AWARDS, HONORS AND GRANTS

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[Zia Award](#) 2023  
“...recognizes outstanding research by a graduate student in the NMSU Astronomy Department.”

[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 TALKS

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Stanford Solar Seminar 01/2024

Title: *“Multi-Height Observations of Propagating Atmospheric Gravity Waves”*

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 at California State University, Northridge 01/2020

Title: *“Gravity Waves in the Photosphere”*

## CONFERENCE PRESENTATIONS

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Poster Presentation. The American Geophysical Union (AGU) Fall Meeting 2023 12/2023

Title: *“Multi-Height Observations of Propagating Atmospheric Gravity Waves”*

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 Title: “ <i>Atmospheric Gravity Waves in the Magnetized Lower Solar Atmosphere</i> ”	08/2021
Virtual Talk. 36 <sup>th</sup> Annual New Mexico Symposium Title: “ <i>The Propagation of Atmospheric Gravity Waves in the Magnetic Solar Atmosphere</i> ”	11/2020
IPoster Presentation. 51 <sup>st</sup> Solar Physics Division Meeting Title: “ <i>Atmospheric Gravity Waves in the Magnetized Solar Atmosphere</i> ”	08/2020
Podium Talk. 29 <sup>th</sup> Annual Elkin R. Isaac Student Research Symposium Title: “ <i>Analysis of the Gaia RVS Region in ESPaDOnS Spectra of Asteroseismic Calibration Stars</i> ”	04/2018
Poster Presentation. 231 <sup>st</sup> American Astronomical Society Meeting Title: “ <i>Analysis of the Gaia RVS Region in ESPaDOnS Spectra of Asteroseismic Calibration Stars</i> ”	01/2018
Poster Presentation. 229 <sup>th</sup> American Astronomical Society Meeting Title: “ <i>The Evolution of Starspots on LO Pegasi</i> ”	01/2017

## RESEARCH EXPERIENCE

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NSF REU Intern, University of Hawai‘i-Mānoa Topic: <i>Analyzing the Gaia RVS Region in ESPaDOnS Spectra</i> Advisors: Daniel Huber, Eric Gaidos	Summer 2017
NSF REU Intern, Ohio Wesleyan University Topic: <i>Analysis of starspots on the young solar analog LO Pegasi</i> Advisor: Robert Harmon	Summer 2016
Summer Research Assistant, Albion College 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	Summer 2015

## TEACHING AND MENTORING EXPERIENCE

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

Albion College Physics Peer Mentor

08/2015 – 05/2018

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## LEADERSHIP AND SERVICE

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COFFIES Beans Inaugural Steering Committee Member	01/2024 – Present
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> Volunteer	08/2020 – 08/2023

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## OBSERVING EXPERIENCE

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

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## WORKSHOPS AND SUMMER SCHOOLS

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AAS Peer Review Training Workshop	06/2023
Preparing for DKIST: He I Diagnostics in the Solar Atmosphere Workshop	02/2022
Preparing for DKIST: An Introduction to Chromospheric Diagnostics Workshop	07/2021
<a href="#">Pennsylvania State University's Center for Astrostatistics: in Statistics for Astronomers XVI</a>	07/2021
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

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## 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)