Adele L. Plunkett

Scientist, North American ALMA Science Center National Radio Astronomy Observatory

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Citizenship: USA

Current employment

Scientist, National Radio Astronomy Observatory

2018 -

(Assistant Scientist, 2018-2022, Associate Scientist, 2022-current)

- Sub-system Scientist for ALMA Integrated Reporting System (IRS), launched Visualizations and Insights for ScienTific operations and Analytics (VISTA), coordinates international team responsible for data-driven infrastructures for operational decision-making
- Deputy Sub-system Scientist of ALMA Science Archive, provides user support and interface development for storage, curation, and access of >1 TB of scientific data
- Member of Community Outreach group for North American ALMA Science Center (NAASC), includes NAASC face-to-face visits, contact scientist, community events
- Previous NAASC roles: Proposal Handling Team lead (2020-21, 23-24) distributed peer review, panel review, interim Sub-system Scientist for Phase 1 Manager, User Registry; Inter-ARC (ALMA Regional Center) liaison (2019-24)

Assistant Professor of Research, Department of Astronomy, University of Virginia

2021 -

(Previously: Visiting Scholar, 2018-2021)

- Engage with the community of faculty and graduate students in both the department and in the interdisciplinary community, including UVA School of Data Science
- Supervising doctoral students, and undergraduate-level senior theses and tutorial research projects

Education

Ph.D. in Astronomy	2015
Master of Science, Philosophy in Astronomy	2011
Yale University, New Haven, CT, USA	
Thesis: "Multi-scale, Multi-wavelength Observations of Outflows in Star-Forming Regions"	
Advisor: Dr. Héctor Arce	
Bachelor of Arts in Physics	2009
Middlebury College, Middlebury, VT, USA	
Thesis: "Three-Dimensional Kinematics of the Oxygen-Rich Supernova Remnant G292.0+1.8"	
Advisor: Dr. P. Frank Winkler	

Fellowships and Research Experiences

European Southern Observatory Fellow (Postdoctoral)

2015-2018

Based in Santiago, Chile

50% independent research, 50% "Astronomer on Duty" at ALMA in northern Chile, and other technical duties to support the ALMA Observatory

National Science Foundation Graduate Research Fellowship

2012-2015

Yale University, New Haven, CT, USA

Advisor: Dr. Héctor G. Arce

Fulbright US Student Program in Chile Universidad de Chile, Santiago, Chile Affiliate: Dr. Diego Mardones	2012-2013
ALMA Visiting Scholar Joint ALMA Observatory, Santiago, Chile Member of Commissioning and Science Verification team	2012
National Science Foundation Research Experience for Undergraduates Cerro Tololo Inter-American Observatory, NOAO, La Serena, Chile Mentor: Dr. Simon Schuler	2008
National Science Foundation Research Experience for Undergraduates Cyclotron Institute, Texas A&M University, College Station, TX Mentor: Dr. Akram Mukhamedzhanov	2007

Honors and Awards

NRAO Star Award, recognition of outstanding scientific staff performance	2021, 2024
Robert L. Brown Outstanding Doctoral Dissertation Award, NRAO	2016
Chambliss Student Award, American Astronomical Society	2012
McDougal Public Service Award nominee, Yale University	2011
Robert K. Gould Prize in Physics, awarded annually for exemplary senior thesis research at Middlebury College	2009
Chambliss Student Award, Undergrad Honorable Mention, American Astronomical Society	2009
Academic Scholar and Dean's List recognition, Middlebury College	2005-2009
New England Small College Athletic Conference Fall All-Academic selection, awarded for sportsmanship and scholarship	2007, 2008
AmeriCorps Education Award (community service scholarship) recipient	2006

Publications

Total peer-reviewed articles: 47

Peer-reviewed articles as first author: 5; as second author: 5

Other articles and proceedings: 10

h-index: 19

Complete list available

List of principle publications:

Book:

Vanden Bout, P., Dickman, R., & **Plunkett, A.** 2023, Cambridge University Press, "The ALMA Telescope - The Story of a Science Mega-Project" (*Open access available*)

Peer-reviewed journal articles as first author:

5. **Plunkett, Adele L.,** Hacar, A., Moser-Fischer, L., et al. 2023, PASP, 135, 034501 "Data Combination: Interferometry and Single-dish Imaging in Radio Astronomy"

- 4. **Plunkett, Adele L.,** Fernández-López, M., Arce, H. G., Busquet, G., Mardones, D., Dunham, M. M., 2018, A&A, 615, A9, "Distribution of Serpens South protostars revealed with ALMA"
- 3. **Plunkett, Adele L.,** Arce, H. G., Mardones, D., van Dokkum, P., Dunham, M. M., Fernández-López, M., Gallardo, J., Corder, S. A. 2015, Nature, 527, 70 "Episodic molecular outflow in the very young protostellar cluster Serpens South"
- 2. **Plunkett, Adele L.,** Arce, H. G., Corder, S. A., Dunham, M. M., Mardones, D., Garay, G., 2015, ApJ, 803, 22 "Assessing molecular outflows and turbulence in the protostellar cluster Serpens South"
- 1. **Plunkett, Adele L.,** Arce, Héctor G., Corder, Stuartt A., Mardones, Diego, Sargent, Anneila I., Schnee, Scott L. 2013, ApJ, 774, 22 "CARMA Observations of Protostellar Outflows in NGC 1333"

Accepted Observing Proposals as PI (years correspond to actual dates of observations)

ALMA, COMPASS: Complex Organic Molecules in Protostars with ALMA Spectral Surveys (2022.1.00316.L)	2022-24
ALMA, Blowing in the wind: An ALMA multiband study of dust in two protostellar winds (2022.1.00216.S)	2022-23
ALMA, Outflows in Class 0/I Protostars with ALMA: A multi-scale approach (2022.1.00131.S)	2022-23
ALMA, "A second epoch of Serpens South's most spectacular outflow" (2019.1.00912.S, 2021.1.00214.S)	2020-21
ALMA, "Outflow structure of the young protostar Lupus 3 MMS" (2017.1.00019.S)	2018
ALMA , "Serpens South: Morphology and kinematics of protostar at cluster center" (2015.1.00283.S)	2016-17
ALMA , "Earliest stages of molecular outflow activity from protostar Lupus 3 MMS" (2015.1.00306.S)	2016
	2016 2011-14
(2015.1.00306.S)	
(2015.1.00306.S) WIYN, "Kinematics and Excitation of Jets in Star Forming Regions" (three epochs)	2011-14
(2015.1.00306.S) WIYN, "Kinematics and Excitation of Jets in Star Forming Regions" (three epochs) ALMA, "Serpens South: Outflows impacting the youngest, densest proto-cluster" (2012.1.00769.S) APEX, "The impact of molecular outflows on intermediate-mass star forming regions: M8 and	2011-14 2014-15 2012B,
(2015.1.00306.S) WIYN, "Kinematics and Excitation of Jets in Star Forming Regions" (three epochs) ALMA, "Serpens South: Outflows impacting the youngest, densest proto-cluster" (2012.1.00769.S) APEX, "The impact of molecular outflows on intermediate-mass star forming regions: M8 and Circinus"	2011-14 2014-15 2012B, 2013A

Observing Experience at Telescope Facilities

MM/SUB-MM INTERFEROMETERS:

Atacama Large Mm/sub-mm Array (ALMA), Chajnantor Plateau, Chile	2012, 2015-18, 2022-24
("Astronomer on Duty" during ~20 weeklong shifts; previously as visiting Scholar with the Commissioning and Science Verification team)	2010, 2011
Combined Array for Research in Millimeter-wave Astronomy (CARMA), Cedar Flat, CA (including CARMA Summer School, and guest observer shift)	
RADIO, MM/SUB-MM SINGLE DISH TELESCOPES:	
Atacama Pathfinder Experiment (APEX), Chajnantor Plateau, Chile	2012, 2013
IDAM 20m talaggama Cranada Sagin	2012

IRAM 30m telescope, Granada, Spain2012Green Bank Telescope (GBT), Green Bank, WV2011Receiver Lab Telescope (RLT), Cerro Sairecabur, Chile2010, 2011Caltech Sub-millimeter Observatory (CSO), Mauna Kea, HI2010

NEAR-IR OBSERVATORIES:	
WIYN 3.5m Telescope, Kitt Peak, AZ	2011, 2013, 2014
OPTICAL OBSERVATORIES:	
SMARTS 1.3m telescope, Cerro Tololo, Chile (visiting Telescope Operator)	2013
SMARTS 1.0m telescope, Cerro Tololo, Chile	2008
SMARTS 0.9m telescope, Cerro Tololo, Chile	2008
Victor M. Blanco 4m telescope, Cerro Tololo, Chile	2008
Collaborations	
COMPASS (Complex Organic Molecules in Protostars with ALMA Spectral Surveys), co-PI of ALMA Large Program	2023-present
eDisk, ALMA Large Program	2019-2024
Total Power Map to Visibilities, NRAO ALMA Development Study	2016-2019
Soul of Lupus with ALMA (SOLA), sub-lead of Outflows/Jets group	2013-2018
CARMA Large-Area Star Formation Survey (CLASSy)	2012-2015
Scientific and Technical Talks	
On history of ALMA:	
ALMA Santiago Central Office, Santiago, Chile	January 2024
(Spanish) ALMA Observing Support Facility, San Pedro de Atacama, Chile	December 2023
UVa/NRAO TUNA Lunch Talk, NRAO, Charlottesville, VA	August 2023
On ALMA data rates, transfer, storage:	
Invited: The ALMA2030 Vision: Design Considerations or the next ALMA Correlator, Charlottesville, VA	February 2020
South American - African Astronomy Coordination Committee (SA3CC) (virtual)	April 2019, 2020, 2021, 2022
On interferometry techniques:	
Green Bank Observatory Single Dish Summer School, Green Bank, WV	June 2024
NRAO Synthesis Imaging Summer School, Socorro, NM	May 2024
NRAO Synthesis Imaging Summer School, Charlottesville, VA	June 2023
NRAO Community Day, Instituto Nacional de Astrofísica, Óptica y Electrónica, Mexico	September 2018
JAO Practical Interferometry: Imaging Combination Techniques	December 2017
On low-mass star formation (review):	
Invited: Half a Decade of ALMA, Indian Wells, CA	September 2016
Joint ALMA Observatory Colloquium, Santiago, Chile	September 2016
On protostellar disk winds:	
VICO/CICO workshop, Charlottesville, VA and Chalmers University, Sweden (virtual)	May 2021
Virtual Internal Science Series, NRAO, Charlottesville, VA (virtual)	February 2021
On chemistry and kinematics of protostellar sources:	_
Invited: Keynote, NRAO Summer Student "boot camp," Green Bank Observatory, WV	June 2022

VICO/CICO workshop, Charlottesville, VA and Chalmers University, Sweden (hybrid)	December 2021
Star Formation Group meeting, NRAO/UVA, Charlottesville, VA (hybrid)	December 2021
Leiden Observatory Lunch Talk, Leiden University, The Netherlands	January 2020
Onsala Space Observatory, Sweden	January 2020
On protostellar cluster formation:	
Niels Bohr Institute Seminar, University of Copenhagen, Denmark	January 2018
Odyssey Group Meeting, IPAG, France	January 2018
Leiden Observatory Lunch Talk, Leiden University, The Netherlands	January 2018
Mm and sub-mm Astronomy Group, MPIfR Bonn, Germany	January 2018
Astronomy Department Seminar, Universidad de Valparaíso, Chile	July 2017
Astronomy Department Colloquium, Universidad de Concepción, Chile	June 2017
On episodic outflows:	
European Week of Astronomy and Space Sciences (EWASS), Prague, Czech Republic	June 2017
ALMA Postdoc Symposium, Indian Wells, CA	September 2016
Star and Planet Formation Seminar, ESO, Garching, Germany	July 2016
On molecular outflows and turbulence in protostellar clusters:	
National Radio Astronomy Observatory – UVa Colloquium, Charlottesville, VA	April 2016
ESO Thirty Minute Talk, ESO, Santiago, Chile	April 2016
Yamamoto Group, University of Tokyo, Japan	December 2014
UVa/NRAO TUNA Lunch Talk, NRAO, Charlottesville, VA	October 2014
R&G Lunch Talk, Harvard Center for Astrophysics, Cambridge, MA	September 2014
X Reunión Científica Anual de la Sociedad Chilena de Astronomía (SOCHIAS, Chilean Society of Astronomy), Viña del Mar, Chile	October 2012
On molecular outflows in NGC 1333:	
Department of Astronomy Seminar, Universidad de Chile, Santiago, Chile	April 2013
Joint ALMA Observatory Colloquium, Santiago, Chile	February 2012
Star Formation Group, ESO, Santiago, Chile	January 2012
Yale-University of Chile Meeting, New Haven, CT	December 2011
On other topics:	
(Spanish) "Formación Estelar: La Vista desde Chile (Star Formation: The View from Chile)" Fulbright Chile Enrichment Seminar, Santiago, Chile	September 2012
"Astrobites: The astro-ph readers digest"	May 2012
Astronomy Graduate Student Seminar, Universidad de Chile, Santiago, Chile	
On undergraduate research topics:	
Supernova Remnants and Pulsar Wind Nebulae in the Chandra Era, Boston, MA	July 2009
Conference for Undergraduate Women in Physics, Yale University, New Haven, CT	January 2009
Keck Northeast Astronomy Consortium Symposium, Wesleyan University, CT	November 2008
Physics Department Colloquium, Middlebury College, Middlebury, VT	November 2008
REU/PIA Workshop, CTIO, La Serena, Chile	March 2008
Cyclotron Institute, TAMU, College Station, TX	August 2007

Poster presentations

IAU Astrochemisty, Traverse City, Michigan	June 2023
From Stars to Galaxies II, Gothenburg, Sweden	June 2023
235th American Astronomical Society Meeting, Honolulu, HI	January 2020
234rd American Astronomical Society Meeting, Florioldid, FI	January 2019
Atacama Large Aperture Submm/mm Telescope (AtLAST) Workshop, Garching, German	
European Week of Astronomy and Space Science, Prague, Czech Republic	May 2017
Star Formation: From Cores to Clusters, ESO, Santiago, Chile	March 2017
European Week of Astronomy and Space Science, Athens, Greece	July 2016
The Early Phase of Star Formation, Ringberg Castle, Germany	June 2016
Revolution in Astronomy with ALMA – The Third Year, Tokyo, Japan	December 2014
Filamentary Structure in Molecular Clouds, NRAO, Charlottesville, VA, USA	October 2014
The Early Phase of Star Formation, Ringberg Castle, Germany	June 2014
Protostars & Planets VI, Heidelberg, Germany	July 2013
Frontiers in Star Formation, Yale University, New Haven, CT, USA	October 2012
219th American Astronomical Society Meeting, Austin, TX, USA	January 2012
CARMA Science Symposium, Berkeley, CA	March 2011
214th American Astronomical Society Meeting, Pasadena, CA	June 2009
213th American Astronomical Society Meeting, Long Beach, CA	January 2009
American Physical Society Division of Nuclear Physics Fall Meeting, Newport News, VA	October 2007
Professional service	
South American - African Astronomy Coordinating Committee (SA3CC)	2019 – present
Referee for journals: Nature, Nature Astronomy, Astrophysical Journal, Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society	2016 – present
Panelist, James Webb Space Telescope proposal selection committee	2023, 2024
Selection Committee, Robert L. Brown Outstanding Doctoral Dissertation Award	2019 – 2023
Co-chair of SOC, NRAO Internal Science Series	2020 - 2022
Selection Committee, CDL Jansky Fellowship	2022
ALMA Proposal Handling Team Technical coordinator (2016-19); Team lead, Panel coordinator (2020-21); Distributed Peer Review coordinator (2024)	2016 – 2021, 2024
SOC, "From Collapsing Cores to Forming Disks" workshop, Charlottesville, USA	2020 (cancelled)
SOC, "Improving Image Fidelity on Astronomical Data" Lorentz Center, Leiden, The Netherlands	August 2019
Grant reviewer: European Research Council	2019
Chair of organizing committee, JAO Colloquium	2016 - 2018
Creator and organizer of JAO Practical Interferometry series	2017 - 2018
(cv.nrao.edu/~aplunket/jaoInterferometry.html)	
Member of organizing committee, JAO Astro-ph Weekly Meeting	2016 - 2018

Member of Fellowship and Studentship Committee, ESO	2016 - 2017
Chair of SOC/LOC, "Star Formation from Cores to Clusters", an international meeting hosted at ESO, Santiago, Chile	March 2017
Co-organizer, "More Coffee More Confidence", bi-weekly series on astro-statistics topics	2016 - 2017
SOC, ALMA Postdoc Symposium, Indian Wells, CA	September 2016

Professional memberships

American Astronomical Society American Association for the Advancement of Science International Astronomical Union

Professional Development

2022
2020-25
2020-21
2020
2020
2017
2016
2015
2014
2014
2012
2011
2010

Astronomy and academic outreach

Letters to a Pre-Scientist	2023-24
Central American - Caribbean Bridge in Astrophysics (CENCA) Bridge mentor	2023
Astrobites: The Astro-ph Reader's Digest, and Astrobites en Español, contributor and member of Editorial Board (astrobites.org, astrobitos.org)	2010-2017
Construction of radio telescope at Observatorio Astronómico Roan Jasé, an educational observatory located in Cajon del Maipo, Chile	2017-2018
Davenport College Senior Mellon Forum, Graduate Affiliate Advisor, Yale University	2013-2015
Graduate Affiliate Program coordinator, Davenport College, Yale University	2011-2015
Volunteer at Leitner Family Observatory and Planetarium (LFOP), Yale University	2009-2015
NE Conference for Undergraduate Women in Physics, Organizing Committee	2010-2012
Women in Science at Davenport College (WISDom) Lunch Series, Yale University	2011

Public Outreach Talks

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Starr Hill Pathways, University of Virginia, Charlottesville, VA	July 2023
Astronomy Club, Girl Scouts of Northern California (virtual)	October 2020
"Space Science Adventurer" badge event, Girl Scouts of Virginia (virtual)	August 2020
Keynote, Girls Excelling in Math, Charlottesville, VA (virtual)	March 2020
"ALMA: Un gran portal al universo (ALMA: A window to the universe)" Congreso Futuro, Santiago, Chile	January 2019
"Una vista astronómica desde Chile (An astronomical view from Chile)", Congreso Futuro, Temuco, Chile	January 2019
"Resumen de operaciones cientificas con ALMA (Summary of scientific operations with ALMA)", ALMA OSF, Chile (for guides of ALMA public tours)	September 2017
"Género e inclusion en observatorios astronómicos en Chile: La perspectiva de una científica (Gender and inclusion in astronomical observatories in Chile: The perspective of a female scientist)", American Corner at Universidad Diego Portales, Santiago, Chile	July 2017
"Girls in Research" (panel in Spanish) American Academy for Science and Technology, Universidad de Talca, Santiago, Chile	December 2016
"El universo a través de distintos lentes (The universe through different lenses)" Astronomy for Everyone, ESO, Santiago, Chile	August 2016
"Star Formation: A View from Telescopes Around the World" Renaissance Austin Retirement Community, Austin, TX, USA	September 2015
"A Tour of Telescopes Worldwide, and the Universe Through Their Eyes" Davenport College Graduate Research Forum, Yale University, New Haven, CT, USA	March 2015
"Star Formation: An Astronomical View From Chile" Davenport College Mellon Forum, Yale University, New Haven, CT, USA	October 2013
"Quién quiere ser astrónomo? (Who wants to be an astronomer?)" American Academy for Science and Technology, Universidad de Talca, Santiago, Chile	September 2012
"Introduction to Radio Astronomy" Talca Astronomy Teachers' Workshop, Universidad de Talca, Talca, Chile	August 2012
"Star Formation: Part of our Cosmic Journey" Davenport College Mellon Forum, Yale University, New Haven, CT, USA	October 2011
"Seeing the Invisible Universe" Public Night at Leitner Family Observatory and Planetarium, Yale University, New Haven, CT, USA	December 2010

Teaching and Mentoring Experience

Year	Program	Role ¹	Student	Project
2021—	Bridge to Doctorate	Advisor	Simran Kaur, UVA	Early Stages of Star Formation: An Episodic Protostellar Outflow in Serpens South
2021—	Doctorate	Advisor	Mihika Rao, UVA	Physical and Chemical Properties of Class 0/I Protostars
2022-23	Doctorate, NRAO Student Observing Support	Advisor	Erica Behrens, UVA	Tracing the Progression of Gas Kinematics from Envelopes to Protostellar Disks
2021—	Doctorate	Advisor	Zoie Telkamp, UVA	The SOMA Survey – Probing Massive Star Formation Across Galactic Environments
2022	NRAO REU (continuation)	Mentor	Ava Nederlander, Stony Brook	An Outburst in Decline: The environment of L1251 VLA 6 (published)
2021	NRAO REU	Mentor	Makoto Johnstone, Middlebury College	Investigating Molecular Detections near Class 0 source CARMA-7 in Serpens South
2020-21	UVA School of Data Science, <i>Capstone</i>	Mentor	Pengwei (Tiger) Hu; Pavan Kumar Bondalapati; Shannon Paylor; John Zhang, UVA	Towards automating search and classification of protostellar images
2020	NRAO, National Astronomy Consortium (NAC)	Mentor	Casey Block, Colorado College	Studying star formation with ALMA: The Serpens South case of an episodic outflow
2019-21	UVA Tutorial (ASTR 4998); senior-year thesis (ASTR 4998)	Advisor	Hannah Shoemaker, UVA	Dust In The Wind: The Search for Dust In the Outflow of Low Mass Protostar HH212
2019-20	UVA Tutorial (ASTR 4993); senior-year thesis (ASTR 4998)	Advisor	Haitian Liu, UVA	Chemistry Study of Hot Corino CARMA-7
2019	Internship	Mentor	Lauren Reynolds, Blue Ridge Virtual Governor's School	Women in STEM
2017-18	ESO, Doctoral Student Fellowship	Mentor	Alejandro Santamaría, ESO, Universidad de Valparaíso	PhD Thesis: Proto-brown dwarfs in Lupus (published)
2018-20	ESO, Undergraduate Student Program	Mentor	Juan Pablo Garcés, ESO, Universidad Técnica Federico Santa María	Serpens South: Envelopes of 52 protostellar candidates
2018	JAO-Princeton Summer Student Program	Mentor	Camille Liotine, Princeton University	Distribution of molecular gas in the SFR Lupus 3 using ALMA
2018	JAO, ESO visitor programs	Mentor	Thomas Nony, University of Grenoble	Episodic accretion constrained by a rich cluster of outflows (published)
2017, 2018	JAO visitor program	Mentor	Mercedes Vazzano, Instituto Argentino de Radioastronomía	Outflows, envelopes, and disks as evolutionary indicators in Lupus young stellar objects (published)
2009-11	Teaching Fellowship, Yale University	Teaching Fellow	Various	Courses: Planets and Stars; Galaxies and the Universe; Frontiers & Controversies in Astrophysics; Search for Extraterrestrial Life (all undergraduate level)
2009-11	Quantitative Reasoning Center, Yale University	Tutor	Various	Topics: physics and astronomy (undergraduate level)
2010-11, 14	Private	Tutor	Various	<i>Topics</i> : physics, chemistry and algebra (high school level)

¹ "Advisor" indicates that academic grades were directly assigned, and does not exclude mentoring, while "mentor" implies a supervisory role of a student, typically with ongoing academic and career mentoring.

Community Service (active)

Girl Scouts of Virginia Skyline, Troop 9620 leader Mill Creek HOA Board, Common Grounds committee Service Dogs of Virginia

Computational skills

Languages: Python, IDL, Fortran, C, Java, LaTeX, HTML, SQL Analysis Packages and Platforms: Dataiku, CASA, miriad, CLASS, IRAF, SuperMongo, Mathematica

Language skills

English: native language

Spanish: full professional proficiency

Japanese: elementary

https://www.cv.nrao.edu/~aplunket/

CV last updated: August, 2024