

Adele L. Plunkett

ESO/ALMA Fellow
European Southern Observatory
Av. Alonso de Cordova 3107
Vitacura, Santiago de Chile
+56 2 2463 3032

E-mail: aplunket@eso.org
Webpage: <http://www.eso.org/~aplunket/>
Citizenship: USA

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	2015-2019
Based in Santiago, Chile	
Observatory duties at ALMA in northern Chile	
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	2012-2013
Universidad de Chile, Santiago, Chile	
Affiliate: Dr. Diego Mardones	
ALMA Visiting Scholar	2012
Joint ALMA Observatory, Santiago, Chile	
Member of Commissioning and Science Verification team	
National Science Foundation Research Experience for Undergraduates	2008
Cerro Tololo Inter-American Observatory, NOAO, La Serena, Chile	
Mentor: Dr. Simon Schuler	
National Science Foundation Research Experience for Undergraduates	2007
Cyclotron Institute, Texas A&M University, College Station, TX	
Mentor: Dr. Akram Mukhamedzhanov	

Honors and Awards

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

Peer-reviewed Publications as First Author

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"

Peer-reviewed Publications as Co-Author

11. Hales, A. S.; Pérez, S.; Saito, M.; Pinte, C.; Knee, L. B. G.; de Gregorio-Monsalvo, I.; Dent, B.; López, C.; **Plunkett, A.**; Cortés, P.; Corder, S.; Cieza, L. 2018, ApJ, 859, 111 "The Circumstellar Disk and Asymmetric Outflow of the EX Lup Outburst System"
10. Vorobyov, E. I.; Elbakyan, V. G.; **Plunkett, Adele L.**, et al. 2018, A&A, 613A, 18B "Knotty protostellar jets as a signature of episodic protostellar accretion?"
9. Stephens, I. W.; Dunham, Michael M.; Myers, P. C.; Pokhrel, R.; Sadavoy, S. I.; Vorobyov, E. I.; Tobin, J. J.; Pineda, J. E.; Offner, S. S. R.; Lee, K. I.; Kristensen, L. E.; Jørgensen, J. K.; Goodman, A. A.; Bourke, T. L.; Arce, H. G.; **Plunkett, Adele L.** 2017, ApJ, 846, 16 "Alignment Between Protostellar Outflows and Filamentary Structure"
8. Storm, Shaye; Mundy, Lee G.; Lee, Katherine I.; Fernández-López, Manuel; Looney, Leslie W.; Teuben, Peter; Arce, Héctor G.; Rosolowsky, Erik W.; Meisner, Aaron M.; Isella, Andrea; Kauffmann, Jens; Shirley, Yancy L.; Kwon, Woojin; **Plunkett, Adele L.**; et al. 2016, ApJ, 830, 127 "CARMA Large Area Star Formation Survey: Dense Gas in the Young L1451 Region of Perseus"
7. Tobin, J. J., Dunham, M. M., Looney, L. W., Li, Z., Chandler, C. J., Segura-Cox, D., Sadavoy, S. I., Melis, C., Harris, R. J., Perez, L. M., Kratter, K., Jorgensen, J. K., **Plunkett, A. L.**, Hull, C. L. H. 2015, ApJ, 798, 61 "First Results from the VLA Nascent Disk and Multiplicity (VANDAM) Survey of Perseus Protostars. Resolving the Sub-Arcsecond Binary System in NGC 1333 IRAS2A"
6. Lee, K.I., Fernandez-Lopez, M.F., Storm, S., Looney, L.W., Mundy, L.G., Segura-Cox, D.M., Teuben, P.J., Rosolowsky, E., Arce, H.G., Ostriker, E.C., Shirley, Y.L., Kwon, W., Kauffmann, J., Tobin, J.J., **Plunkett, A. L.**, et al. 2014, ApJ, 797, 76 "CARMA Large Area Star Formation Survey: Structure and Kinematics of Dense Gas in Serpens Main"
5. Storm, S., Mundy, L. G., Fernández-López, M., Lee, K. I., Looney, L. W., Teuben, P. J., Rosolowsky, E., Arce, H. G., Ostriker, E. C., Segura-Cox, D., Pound, M. W., Salter, D. M., Volgenau, N. H., Shirley, Y. L., Chen, C., Gong, H., **Plunkett, A. L.**, et al. 2014, ApJ, 794, 165 "CARMA Large Area Star Formation Survey: Project Overview with Analysis of Dense Gas Structure and Kinematics in Barnard 1"
4. Fernández-López, M., Arce, H. G., Looney, L., Mundy, L. G., Storm, S., Teuben, P. J., Lee, K., Segura-Cox, D., Isella, A., Tobin, J. J., Rosolowsky, E., **Plunkett, A. L.**, et al. 2014, ApJL, 790, L19 "CARMA Large Area Star Formation Survey: Observational Analysis of Filaments in the Serpens South Molecular Cloud"

3. Roshi, D. A., **Plunkett, A. L.**, Rosero, V., & Vaddi, S. 2012, ApJ, 749, 49 “On the Ionization of Luminous WMAP Sources in the Galaxy: Constraints from He Recombination Line Observations with the GBT”
2. Schuler, S. C., **Plunkett, A. L.**, King, J.R., & Pinsonneault, M.H. 2010, PASP, 122, 766 "Fe I and Fe II Abundances of Solar-Type Dwarfs in the Pleiades Open Cluster"
1. Mukhamedzhanov M., Bém, P., Burjan, V., Gagliardi, C. A., Goldberg, V. Z., Hons, Z., La Cognata, M., Kroha, V., Mrázek, J., Novák, J., Piskoř, Š., Pizzone, R. G., **Plunkett, A. L.**, Romano, S., Šimečková, E., Spitaleri, C., Trache, L., Tribble, R. E., Veselý, F., and Vincour, J., 2008, Phys. Rev. C 78, 015804 “New astrophysical S factor for the $^{15}\text{N}(p, \gamma)^{16}\text{O}$ reaction via the asymptotic normalization coefficient (ANC) method”

Other Publications, Proceedings

6. **Plunkett, A.**, & Yen, H.W. 2017, The Messenger, 169, 68 "Fellows at ESO"
5. **Plunkett, A.**, Comerón, F., & Testi, L. 2017, The Messenger, 169, 58 "Report on the ESO Workshop 'Star Formation from Cores to Clusters'"
4. **Plunkett, A.**, Arce, H., Corder, S., & Dunham, M. 2017, Star Formation from Cores to Clusters, 46 "Uncovering the Protostars in Serpens South with ALMA: Continuum Sources and Their Outflow Activity"
3. **Plunkett, Adele. L.** 2016, Nature, 538, 466 “Astrophysics: Birth of Stellar Siblings”
2. **Plunkett, Adele. L.** 2015, The Star Formation Newsletter, 275, 5 “The Serpens South Cluster” (<http://www.ifa.hawaii.edu/users/reipurth/newsletter/newsletter275.pdf>)
1. **Plunkett, Adele. L.**, et al. 2015, Revolution in Astronomy with ALMA: The Third Year, 499, 241 “ALMA's High-Resolution View of the Protostellar Cluster Serpens South: Outflow Activity and Continuum Sources”

Accepted Observing Proposals

(PI: Plunkett, unless otherwise noted; years correspond to dates of observations)

ALMA , “Outflow structure of the young protostar Lupus 3 MMS” (2017.1.00019.S)	2018
ALMA , “Formation and Evolutionary Processes of Low-mass YSOs in Lupus” (2016.1.01141.S, PI: S. Takahashi)	2017
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
WIYN , “Kinematics and Excitation of Jets in Star Forming Regions” (three epochs)	2011, 2013, 2014
ALMA , “Serpens South: Outflows impacting the youngest, densest proto-cluster” (2012.1.00769.S)	2014-15
APEX , “The impact of molecular outflows on intermediate-mass star forming regions: M8 and Circinus”	2012B, 2013A
IRAM , “Outflow impacts on the protocluster Serpens South”	2012
CARMA , “Mapping the entire impact of protostellar outflows in NGC1333”	2011B
CARMA , “Protostellar outflows and infall in young clusters”	2011A

Observing Experience at Telescope Facilities

MM/SUB-MM INTERFEROMETERS:

Atacama Large Mm/sub-mm Array (ALMA) , Chajnantor Plateau, Chile (Fellow “Astronomer on Duty” ~80 nights per year; previously as visiting Scholar with the Commissioning and Science Verification team)	2012, 2015 – ongoing
Combined Array for Research in Millimeter-wave Astronomy (CARMA) , Cedar Flat, CA (including CARMA Summer School, and guest observer shift)	2010, 2011
RADIO, MM/SUB-MM SINGLE DISH TELESCOPES:	
Atacama Pathfinder Experiment (APEX) , Chajnantor Plateau, Chile	2012, 2013
IRAM 30m telescope , Granada, Spain	2012
Green Bank Telescope (GBT) , Green Bank, WV	2011
Receiver Lab Telescope (RLT) , Cerro Sairecabur, Chile	2010, 2011
Caltech Sub-millimeter Observatory (CSO) , Mauna Kea, HI	2010
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

Soul of Lupus with ALMA (SOLA) , sub-lead of Outflows and Jets group Group lead: I. de Gregorio-Monsalvo	2013-present
Total Power Map to Visibilities , NRAO ALMA Development Study PI: J. Koda (with P. Teuben)	2016-present
CARMA Large-Area Star Formation Survey (CLASSy) PI: L. Mundy	2012-2015

Scientific and Technical Talks

On interferometry techniques:	
JAO Practical Interferometry: Imaging Combination Techniques	December 2017
On low-mass star formation (review):	
<i>Invited:</i> Half a Decade of ALMA, Indian Wells, CA, USA	September 2016
Joint ALMA Observatory Colloquium, Santiago, Chile	September 2016
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

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ALMA Postdoc Symposium, Indian Wells, CA, USA	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, USA	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, USA	October 2014
R&G Lunch Talk, Harvard Center for Astrophysics, Cambridge, MA, USA	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:	
“Formación Estelar: La Vista desde Chile (Star Formation: The View from Chile)”	September 2012
Fulbright Chile Enrichment Seminar, Santiago, Chile	
“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

Atacama Large Aperture Submm/mm Telescope (AtLAST) Workshop, Garching, Germany	January 2018
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

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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

Chair of organizing committee, JAO Colloquium	2016 – present
Creator and organizer of JAO Practical Interferometry series (http://www.eso.org/~aplunket/jaoInterferometry)	2017 – present
Member of organizing committee, JAO Astro-ph Weekly Meeting	2016 – present
Referee for journals <i>Nature</i> , <i>Nature Astronomy</i> , <i>Astrophysical Journal</i>	2016, 2017
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”, a bi-weekly series at ESO about statistical concepts in astronomy	2016 – 2017
Technical Secretary, ALMA Proposal Review	June 2016, 2017
ALMA Proposal Handling Team	2016
SOC, ALMA Postdoc Symposium, Indian Wells, CA	September 2016

Astronomy and academic outreach

Astrobits: The Astro-ph Reader’s Digest, and Astrobits en Español, contributor and member of Editorial Board (astrobits.org, astrobitos.org)	2010-present
Construction of radio telescope at Observatorio Astronómico Roan Jasé, an educational observatory located in Cajon del Maipo, Chile	2017
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

“Resumen de operaciones científicas 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

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“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

Fellow mentor , co-supervisor of doctoral student Alejandro Santamaría, ESO “Proto-brown dwarfs in Lupus”	2017-2018
Mentor , supervisor of undergrad Camille Liotine, JAO (Princeton Summer Program) “Distribution of molecular gas in the SFR Lupus 3 using ALMA”	July – August 2018
Mentor , supervisor of visiting undergrad Juan Pablo Garcés, ESO “Serpens South: Envelopes of 52 protostellar candidates”	March 2018, ongoing
Fellow mentor , co-supervisor of visiting doctoral student Mercedes Vazzano, JAO “Formation and Evolutionary Processes of Low-mass YSOs in Lupus”	Nov-Dec 2017
Teaching Fellow, Yale University: Planets and Stars; Galaxies and the Universe; Frontiers & Controversies in Astrophysics; Search for Extraterrestrial Life (all at undergraduate level)	2009-2011
Tutor, Yale University: Physics and Astronomy, Quantitative Reasoning Center	2009-2011
Tutor, private: High school level physics, chemistry and algebra	2010-11,14

Professional Development and Science visits

Principles of Project Management and Team Work , ESO, Santiago, Chile	2017
Science visitor , ESO Headquarters, Garching, Germany	2016
Science Writing Workshop with Carl Zimmer , Yale University, CT, USA	2015
Scicoder Workshop , New York City, NY, USA	2014
Visitor program for data reduction , North American ALMA Science Center, NRAO, Charlottesville, VA, USA	2014
ALMA Early Science Users Workshop , Universidad de Chile, Santiago, Chile	2012
NAIC/NRAO School on Single Dish Astronomy , Green Bank, WV, USA	2011
CARMA Summer School on Interferometry , Cedar Flat, CA, USA	2010

Computational skills

Languages: Python, IDL, Fortran, C, Java, LaTeX, HTML

Analysis Packages: CASA, miriad, CLASS, IRAF, SuperMongo, Mathematica

Language skills

English: native language

Spanish: full professional proficiency

Japanese: elementary

Technical Expertise

Astronomer on Duty at ALMA Observatory – Since 2015, my duties as ESO Fellow include ~80 days/nights per year as Astronomer on Duty (AoD) at ALMA OSF. Responsibilities include: execute accepted projects according to ranking, array status, source availability, weather conditions, etc.; monitor array status; perform quality assessment (QA0) for recently observed projects; attend daily coordination meeting; perform calibration and Extension and Optimization of Capabilities (EOC) projects. Occasionally we represent the ALMA Observatory during the weekend public visits, school visits, and media interviews.

ALMA Proposal Handling Team – During Cycles 4 and 5, I participated as the ALMA Proposal Handling Team (PHT) Fellow, supporting the PHT lead Gautier Mathys. Activities at JAO prior to the proposal review included: inspect science categories of submitted proposals in order to properly assign the reviewers; test the proposal review software (ph1m) along with developer Andrea Corvillon; develop and edit documentation for the review process. At the annual ALMA Proposal Review meeting, I acted as coordinator of the Technical Secretaries, giving them training and assistance. Following the meeting, I reviewed the various “flags” (comments or conflicts) for attention to the PHT, and we processed the panel rankings. I became proficient with the ph1m software, and the review process.

NRAO ALMA Development Study – I participate as co-I of the study “Total Power Map to Visibilities (tp2vis)” (PI: J. Koda), a software tool to be implemented in CASA for combining and imaging interferometry and single dish (total power) observations. I provided feedback for the proposal and reports, and ongoing testing of the software using ALMA observations of Lupus 3 MMS (2015.1.00306.S; PI: Plunkett).

Letters of reference

Prof. Héctor Arce, hector.arce@yale.edu

Department of Astronomy, Yale University, PO Box 208101, New Haven, CT 06520, USA

Dr. Itziar De Gregorio-Monsalvo, Itziar.DeGregorio@alma.cl

Joint ALMA Observatory, Alonso de Córdova 3107, Vitacura, Casilla 19001, Santiago, Chile

Dr. John Carpenter, john.carpenter@alma.cl

Joint ALMA Observatory, Alonso de Córdova 3107, Vitacura, Casilla 19001, Santiago, Chile

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