

# Rebecca C. Levy

PhD Candidate — Department of Astronomy — University of Maryland

Department of Astronomy  
University of Maryland  
College Park, MD 20742

rlevy@astro.umd.edu  
www.astro.umd.edu/~rlevy  
Citizenship: USA

## Research Interests

---

- The role of stellar feedback in shaping the interstellar medium and galaxy evolution
- Multiphase gas kinematics and dynamics, especially the molecular and diffuse ionized gas phases
- Galaxies in the low-redshift universe
- Multiwavelength spectroscopic observations: radio, (sub-)millimeter, (mid-, far-)infrared, optical

## Experience

---

Starting October 2021	<b>National Science Foundation Astronomy &amp; Astrophysics Postdoctoral Fellow</b> Dept. of Astronomy/ Steward Observatory University of Arizona, Tucson, AZ
August 2019 – May 2020	<b>Graduate Teaching/Lab Assistant</b> Dept. of Astronomy University of Maryland, College Park, MD
August 2015 – present	<b>Graduate Research Assistant</b> Dept. of Astronomy University of Maryland, College Park, MD

## Education

---

August 2021 (anticipated)	<b>Ph.D. in Astronomy</b> University of Maryland, College Park, MD <i>“Investigating Star Formation Feedback through Gas Kinematics in Nearby Galaxies”</i> Advisor: Prof. Alberto Bolatto
December 2017	<b>M.S. in Astronomy</b> University of Maryland, College Park, MD <i>“The EDGE-CALIFA Survey: Molecular and Ionized Gas Kinematics”</i> Advisor: Prof. Alberto Bolatto
May 2015	<b>B.S. in Astronomy, B.S. in Physics</b> University of Arizona, Tucson, AZ Cum Laude with Honors Minor in French <i>“Determining the Characteristic Timescale of Polarization Variations in Sagittarius A*”</i> Advisor: Prof. Daniel Marrone

## First-Authored and Supervised Publications

---

**51 first-author citations — first-author h-index = 2**

A full publication list can be found at the end

- [5] “*The Morpho-Kinematic Architecture of Super Star Clusters in the Center of NGC 253*”  
Levy, R. C., Bolatto, A. D., Leroy, A. K., et al. in prep. (to be submitted < 6 months)
- [4] “*Cuspy Dark Matter Density Profiles in Massive Dwarf Galaxies*”  
Cooke, L., Levy, R. C., Bolatto, A. D., et al. 2021, MNRAS, submitted
- [3] “*Outflows from Super Star Clusters in the Central Starburst of NGC 253*”  
Levy, R. C., Bolatto, A. D., Leroy, A. K., et al. 2021, [ApJ](#), **912**, 4  
Featured in NRAO eNews [Vol. 14 Issue 5](#)
- [2] “*The EDGE-CALIFA Survey: Evidence for Pervasive Extraplanar Diffuse Ionized Gas in Nearby Edge-On Galaxies*”  
Levy, R. C., Bolatto, A. D., et al. 2019, [ApJ](#), **882**, 84
- [1] “*The EDGE-CALIFA Survey: Molecular and Ionized Gas Kinematics in Nearby Galaxies*”  
Levy, R. C., Bolatto, A. D., et al. 2018, [ApJ](#), **860**, 92

## Honors and Awards

---

2020	Andrew S. Wilson Prize for Excellence in Research University of Maryland, Dept. of Astronomy
2020	Philip E. Angerhofer Outstanding Teaching Assistant Award University of Maryland, Dept. of Astronomy
2020	Prize for Excellence in Mentoring University of Maryland, Dept. of Astronomy
2019, 2017	International Conference Student Support Award University of Maryland, Graduate School
2019, 2017	The Jacob K. Goldhaber Travel Grant University of Maryland, Graduate School
2018 – 2019	Outstanding Research Assistant Award University of Maryland, Graduate School
2016	Graduate Research Fellowship Program — Honorable Mention National Science Foundation

## Recent Scientific Presentations

---

Presentations without a listed location were given virtually due to the COVID-19 pandemic.

## Invited Talks

---

May 2021	Cornell Galaxy Lunch Seminar
Feb 2021	Princeton Star Formation/ISM Rendezvous
Nov 2020	Ringberg Workshop on “How does small-scale physics drive galaxy evolution?” Virtual Seminar
Oct 2020	Center for Cosmology and Astroparticle Physics (CCAPP) Seminar
Oct 2019	The Warm Ionized Medium (WIM) Workshop — <b>Review Talk</b> Green Bank, WV

**Contributed Talks**


---

Jan 2021	The 237 <sup>th</sup> Meeting of the American Astronomical Society	
Nov 2020	UVa/ NRAO Astronomy Lunch Talk Series	
Nov 2020	Steward/NOAO Galaxy Group Seminar	
Nov 2020	UT Austin ISM Seminar	
Oct 2020	UCLA Astronomy & Physics Lunch Talk Series	
Oct 2020	STScI Galaxy Journal Club	
Sept 2020	SMA Seminar	
Oct 2019	ALMA 2019: Science Results and Cross-Facility Synergies	Cagliari, Italy
June 2019	Radio/Millimeter Astrophysical Frontiers in the Next Decade	Charlottesville, VA
Nov 2018	Goddard Space Flight Center ISM Group Lunch Talk	Greenbelt, MD
Sept 2018	National Science Foundation Lunch Talk	Alexandria, VA
June 2018	Astrophysical Frontiers in the Next Decade and Beyond: Planets, Galaxies, Black Holes, and the Transient Universe	Portland, OR
Jan 2018	The 231 <sup>st</sup> Meeting of the American Astronomical Society	Washington, D.C.

**Posters**


---

Oct 2017	The Role of Gas in Galaxy Dynamics	Valletta, Malta
Sept 2016	Half a Decade of ALMA: Cosmic Dawns Transformed	Palm Springs, CA
Apr 2016	Molecular Gas in Galactic Environments	Charlottesville, VA

**Observational Experience**


---

<b>ALMA</b>	<b>PI</b>	Cycle 7	<i>“Ionized Gas, Radiation Field, Masses, and Dust Temperature in Forming Massive Star Clusters in the NGC253 Starburst”</i> Rank: A Awarded 24.1 hours
	<b>Co-I</b>	Cycle 7	<i>“A Representative Interferometric Survey of Galaxies in the <math>z=0</math> Universe with Full IFU Coverage: EDGE”</i> PI: A. Bolatto
	<b>Co-I</b>	Cycle 7	<i>“How to Feed a Torus: Resolving the Center of Circinus”</i> PI: E. Mills
	<b>Co-I</b>	Cycle 6	<i>“Ionized Gas, Radiation Field, Masses, and Dust Temperature in Forming Massive Star Clusters in the NGC253 Starburst”</i> PI: A. Bolatto
	<b>Co-I</b>	Cycle 6	<i>“Resolving the Super Star Clusters in the Nuclear Starburst of NGC4945”</i> PI: A. Leroy
	<b>Co-I</b>	Cycle 4	<i>“Utilizing Dense Gas to Solve the Variations of Molecular Gas Depletion Time”</i> PI: D. Utomo
<b>GBT</b>	<b>Co-I</b>	2021b	<i>“GBT EDGE: A Representative Survey of the <math>z=0</math> Universe with Full IFU Spectroscopy”</i> PI: A. Bolatto

			Awarded 300 hours
	Co-I	2021a	<i>“Feedback from Diffuse Ionized Gas in the Cygnus X Star-Forming Region”</i> PI: K. Emig
<b>IRAM</b>	Co-I	2021b	<i>“Dense Molecular Gas in the Outflow of M82”</i> PI: F. Walter
<b>JWST</b>	Co-I*	Cycle 1	<i>“Dissecting the Prototypical Starbursts NGC 253 and M 82 and Their Cool Galactic Winds”</i> PI: A. Bolatto Awarded 42.8 hours *I led the technical planning and justification for this proposal.
	Co-I	Cycle 1	<i>“Structure Formation and Baryonic Cycling in the Edge-on Galaxy NGC891”</i> PI: I. De Looze
<b>LMT</b>	Co-I	2021-S1	<i>“The Connection between Molecular Gas Density, Star-formation and Quenching”</i> PI: S. Sánchez
<b>SMA</b>	Co-I	2018b	<i>“Searching for Embedded Super Star Clusters in M82”</i> PI: M. Jiménez Donaire
<b>SOFIA</b>	<b>PI</b>	Cycle 8/7	<i>“The GREAT Cigar: Mapping [CII] in the Disk and Outflow of M82”</i> Rank: A/B Awarded 9 hours and \$90,000
	Co-I	Cycle 9	<i>“SOFIA GREAT Mapping of the LMC Northern Molecular Ridge”</i> PI: A. Bolatto
	Co-I	Cycle 8	<i>“Local Analogues of Turbulent, Clumpy, Main-Sequence Galaxies at the Peak of Cosmic Star Formation”</i> PI: L. Lenkić
	Co-I	Cycle 8/7	<i>“Studying the Energetics of Galaxies with Velocity-Resolved [CII] Observations in an IFU-Selected Galaxy Sample”</i> PI: A. Bolatto
	Co-I	Cycle 7	<i>“Are Galactic Winds Metal-Enriched Compared to their Host Galaxies?”</i> PI: J. Spilker
<b>VLA</b>	Co-I	2021b	<i>“Recombination Lines from Diffuse Ionized Gas in the Nuclear Starburst of NGC253”</i> PI: K. Emig
	Co-I	2019b	<i>“Methanol Masers in Global Starbursts”</i> PI: M. Gorski

## Students Mentored

---

Lauren Cooke

May 2020,

**Publication:** Cooke, L., Levy, R. C., et al., submitted

	Summer 2019	High school senior — Now Undergraduate at Harvard University
Brandon Davey	January 2020	GRAD-MAP Winter Workshop <b>Publication:</b> Cooke, L., Levy, R. C., et al., submitted Undergraduate of University of South Florida — Now Quality Technician at Samsung Austin Semiconductor
Nathnael Feleke	Summer 2019, January 2019	GRAD-MAP Summer Scholars & Winter Workshop Summer Scholars co-mentors: Prof. Alberto Bolatto, Prof. Stuart Vogel. Dr. Peter Teuben Undergraduate at Montgomery College - Takoma Park — Now Undergraduate at Florida Institute of Technology
Aurora Cid	January 2018	GRAD-MAP Winter Workshop Undergraduate at CUNY College of Staten Island
Natalia Ramírez Vega	January 2017	GRAD-MAP Winter Workshop Undergraduate at University of Costa Rica & Fidélitas University — Now Jr. Data Analyst at McKinsey & Company

## Professional Service & Memberships

---

Referee for	MNRAS
Meetings Organized	The Warm Ionized Medium Workshop (SOC), October 2019
Committee Service	UMD Dept. of Astronomy Faculty Search Committee, Spring 2020 UMD Dept. of Astronomy Graduate Student Council Rep., 2017–2020
Collaboration	EDGE-CALIFA, 2015
Membership	DEGAS, 2018 Resolved Universe of Galaxies, 2020
Society Membership	American Astronomical Society, Graduate Student Member
Talk Series Organized	UMD Dept. of Astronomy weekly arXiv discussion, 2019 – 2020
Certified to Operate	Green Bank Telescope (remote), 2018

## Teaching Experience

---

Spring 2020	Teaching and Lab Assistant Astronomy 121: Introductory Astrophysics II — Stars and Beyond	U. Maryland
Fall 2019	Teaching Assistant Astronomy 120: Introductory Astrophysics — Solar System	U. Maryland
Spring 2014	Preceptor Physics 141: Introductory Mechanics	U. Arizona
Spring 2013	Undergraduate Teaching Coordinator Math 100/100AX: Prep. for College Algebra	U. Arizona
Fall 2012	Undergraduate Teaching Coordinator Math 100/100AX: Prep. for College Algebra	U. Arizona

Spring 2012	Lead Undergraduate Teaching Assistant Math 100/100AX: Prep. for College Algebra	U. Arizona
Fall 2011	Undergraduate Teaching Assistant Math 100/100AX: Prep. for College Algebra	U. Arizona

## Selected Outreach Experience

---

2016 – 2020

### **GRAD-MAP (Graduate Resources Advancing Diversity with Maryland Astronomy and Physics)**

- Served as a research mentor for four students over four years during the week-long Winter Workshop.
  - Served as a co-mentor for one student during the Summer Scholars program.
  - Helped plan Winter Workshops and Summer Scholars programs.
  - Developed and led professional development sessions during the Winter Workshops and Summer Scholars programs.
  - Helped organize and chaperone two weekend trips to the Green Bank Observatory.
  - Helped organize and run the annual Open House, including helping to develop the inaugural Open House.
  - Attended Collaborative Seminar Series at local institutions.
  - Updated the GRAD-MAP Twitter.

Aug 2013 – July 2015,  
Apr 2016, June 2016

### **NOAO Education and Public Outreach Department**

- Key developer of all aspects of the United Nations sanctioned [International Year of Light 2015 Quality Lighting Teaching Kit](#) (cornerstone project), including activity creation and development, materials sourcing, instructional guide and media writing, state and national educational standards verification, and classroom testing. These kits have been disseminated internationally and are available for retail sale.
  - Guest lecturer and support staff for two [Colors of Nature](#) Summer Academies in Tucson, AZ. This NSF-funded educational research study investigates the development of middle-school girls' identities as scientists as they explore the intersections of art and science (STEAM) in a two-week summer academy.
  - Worked extensively with the public, K-12 students, K-12 teachers, and members of the Tohono O'odham Nation.
    - Developed, planned, led, and/or supported 1–2 outreach activities per week (on average) focused on astronomy education and Dark Skies awareness.
    - Developed, planned, led, and/or supported local, national, and international teacher training workshops and outreach events (e.g., workshops at AAS, AGU, and IAU meetings, US Science and Engineering Festival).
    - Involvement in the Globe at Night citizen-science campaign including website design, social media, development of materials, newsletter writing, podcast writing and recording, and facilitating translation of materials.
    - Hired, trained, mentored, and evaluated other student employees.

## Publication List

---

394 total citations — h-index = 10

[Link to current publications in ADS](#)

- [22] Villanueva, V., Bolatto, A., Vogel, S., **Levy, R. C.**, Sánchez, S. F., Barrera-Ballesteros, J., Wong, T., Rosolowsky, E., Colombo, D., Rubio, M., Cao, Y., Kalinova, V., Leroy, A., Utomo, D., Herrera-Camus, R., Blitz, L. 2021, *ApJ*, submitted “*The EDGE-CALIFA Survey: The Resolved Star Formation Efficiency and Local Physical Parameters*”
- [21] Cooke, L. H., **Levy, R. C.**, Bolatto, A. D., Teuben, P., Davey, B. D., Newman, A. B., Simon, J. D., Wright, M., Lenkić, L., Tarantino, E., Villanueva, V. 2021, *MNRAS*, submitted “*Cuspy Dark Matter Density Profiles in Massive Dwarf Galaxies*”
- [20] Mills, E. A. C., Gorski, M., Emig, K. L., Bolatto, A. D., **Levy, R. C.**, Leroy, A. K., Ginsburg, A., Henshaw, J. D., Zschaechner, L. K., Veilleux, S., Tanaka, K., Meier, D. S., Walter, F., Krieger, N., Ott, J. 2021, *ApJ*, accepted “*Clustered Star Formation in the Center of NGC 253 Contributes to Driving the Ionized Nuclear Wind*”
- [19] Krieger, N., Walter, F., Bolatto, A. D., Guillard, P., Lehnert, M., Leroy, A. K., Pety, J., Emig, K. L., **Levy, R. C.**, Krips, M., Rix, H.-W., Salak, D., Weiß, A., Veilleux, S. 2021, *ApJ*, in press “*NOEMA High Fidelity Imaging of the Molecular Gas in and around M 82*”
- [18] Tarantino, E., Bolatto, A. D., Herrera-Camus, R., Harris, A. I., Wolfire, M., Buchbender, C., Croxall, K. V., Dale, D. A., Groves, B., **Levy, R. C.**, Riquelme, D., Smith, J.-D. T., Stutzki, J. 2021, *ApJ*, in press “*Characterizing the Multi-Phase Origin of [CII] Emission in M101 and NGC 6946 with Velocity Resolved Spectroscopy*”
- [17] **Levy, R. C.**, Bolatto, A. D., Leroy, A. K., Emig, K. L., Gorski, M., Krieger, N., Lenkić, L., Meier, D. S., Mills, E. A. C., Ott, J., Rosolowsky, E., Tarantino, E., Veilleux, S., Walter, F., Weiß, Axel, Zwaan, M. A. 2020, *ApJ*, **912**, 4 “*Outflows from Super Star Clusters in the Central Starburst of NGC 253*”
- [16] Barrera-Ballesteros, J. K., Sánchez, S. F., Heckman, T., Wong, T., Bolatto, A., Ostriker, E., Rosolowsky, E., Carigi, L., Vogel, S., **Levy, R. C.**, Colombo, D., Luo, Yufeng, Cao, Yixian, the EDGE-CALIFA team 2021, *MNRAS*, **503**, 3643 “*The EDGE-CALIFA Survey: Star Formation is Self-Regulated at Kpc Scales*”
- [15] Sánchez, S. F., Barrera-Ballesteros, J. K., Colombo, D., Wong, T., Bolatto, A., Rosolowsky, E., Vogel, S., **Levy, R. C.**, Kalinova, V., Alvarez-Hurtado, P., Luo, Y., Cao, Y. 2021, *MNRAS*, **503**, 1615 “*The EDGE-CALIFA Survey: The Local and Global Relations between  $\Sigma_*$ ,  $\Sigma_{\text{SFR}}$ , and  $\Sigma_{\text{mol}}$  that Regulate Star Formation*”
- [14] Colombo, D., Sanchez, S. F., Bolatto, A. D., Kalinova, V., Weiß, A., Wong, T., Rosolowsky, E., Vogel, S. N., Barrera-Ballesteros, J., Dannerbauer, H., Cao, Y., **Levy, R. C.**, Utomo, D., Blitz, L. 2020, *A&A*, **644**, 97 “*The EDGE-CALIFA Survey: Exploring the Role of the Molecular Gas on the Galaxy Star Formation Quenching*”
- [13] Emig, K. L., Bolatto, A. D., Leroy, A. K., Mills, E. A. C., Jiménez Donaire, M. J., Tielens, A. G. G. M., Ginsburg, A., Gorski, M., Krieger, N., **Levy, R. C.**, Meier, D. S., Ott, J., Rosolowsky, E., Thompson, T. A., Veilleux, S. 2020, *ApJ*, **903**, 50 “*Star Clusters in the Central Starburst of NGC 4945*”

- [12] Krieger, N., Bolatto, A. D., Koch, E. W., Leroy, A. K., Rosolowsky, E., Walter, F., Weiß, A., Eden, D. J., **Levy, R. C.**, Meier, D. S., Mills, E. A. C., Moore, T., Ott, J., Su, Y., Veilleux, S. 2020, *ApJ*, **899**, 158 “*The Turbulent Gas Structure in the Centers of NGC 253 and the Milky Way*”
- [11] Krieger, N., Bolatto, A. D., Leroy, A. K., **Levy, R. C.**, Mills, E. A. C., Meier, D. S., Ott, J., Veilleux, S., Walter, F., Weiß, A. 2020, *ApJ*, **897**, 176 “*The Molecular ISM in the Super Star Clusters of the Starburst NGC253*”
- [10] Barrera-Ballesteros, J. K., Utomo, D., Bolatto, A. D., Sánchez, S. F., Vogel, S. N., Wong, T., **Levy, R. C.**, Colombo, D., Kalinova, V., Teuben, P., García-Benito, R., Husemann, B., Mast, D., Blitz, L. 2020, *MNRAS*, **492**, 2651 “*The EDGE-CALIFA Survey: Using Optical Extinction to Probe the Spatially-Resolved Distribution of Gas in Nearby Galaxies*”
- [9] Krieger, N., Bolatto, A. D., Walter, F., Leroy, A. K., Zschaechner, L. K., Meier, D. S., Ott, J., Weiß, A., Mills, E. A. C., **Levy, R. C.**, Veilleux, S., Gorski, M. 2019, *ApJ*, **881**, 43 “*The Molecular Outflow in NGC 253 at a Resolution of Two Parsecs*”
- [8] **Levy, R. C.**, Bolatto, A. D., Sánchez, S. F., Blitz, L., Colombo, D., Kalinova, V., López-Cobá, C., Ostriker, E. C., Teuben, P., Utomo, D., Vogel, S. N., Wong, T. 2019, *ApJ*, **882**, 84 “*The EDGE-CALIFA Survey: Evidence for Pervasive Extraplanar Diffuse Ionized Gas in Nearby Edge-On Galaxies*”
- [7] Leroy, A. K., Bolatto, A. D., Ostriker, E. C., Walter, F., Gorski, M., Ginsburg, A., Krieger, N., **Levy, R. C.**, Meier, D. S., Mills, E., Ott, J., Rosolowsky, E., Thompson, T. A., Veilleux, S., Zschaechner, L. K. 2018, *ApJ*, **869**, 126 “*Forming Super Star Clusters in the Central Starburst of NGC 253*”
- [6] **Levy, R. C.**, Bolatto, A. D., Teuben, P., Sánchez, S. F., Barrera-Ballesteros, J. K., Blitz, L., Colombo, D., García-Benito, R., Herrera-Camus, R., Husemann, B., Kalinova, V., Lan, T., Leung, G. Y. C., Mast, D., Utomo, D., van de Ven, G., Vogel, S. N., Wong, T. 2018, *ApJ*, **860**, 92 “*The EDGE-CALIFA Survey: Molecular and Ionized Gas Kinematics in Nearby Galaxies*”
- [5] Leung, G. Y. C., Leaman, R., van de Ven, G., Lyubenova, M., Zhu, L., Bolatto, A. D., Falcón-Barroso, J., Blitz, L., Dannerbauer, H., Fisher, D. B., **Levy, R. C.**, Sanchez, S. F., Utomo, D., Vogel, S., Wong, T., Ziegler, B. 2018, *MNRAS*, **477**, 254 “*The EDGE-CALIFA Survey: Validating Stellar Dynamical Mass Models with CO Kinematics*”
- [4] Colombo, D., Kalinova, V., Utomo, D., Rosolowsky, E., Bolatto, A. D., **Levy, R. C.**, Wong, T., Sanchez, S. F., Leroy, A. K., Ostriker, E., Blitz, L., Vogel, S., Mast, D., García-Benito, R., Husemann, B., Dannerbauer, H., Ellmeier, L., Cao, Y. 2017, *MNRAS*, **475**, 1791 “*The EDGE-CALIFA Survey: The Influence of Galactic Rotation on the Molecular Depletion Time Across the Hubble Sequence*”
- [3] Utomo, D., Bolatto, A. D., Wong, T., Ostriker, E. C., Blitz, L., Sanchez, S. F., Colombo, D., Leroy, A. K., Cao, Y., Dannerbauer, H., Garcia-Benito, R., Husemann, B., Kalinova, V., **Levy, R. C.**, Mast, D., Rosolowsky, E., Vogel, S. N. 2017, *ApJ*, **849**, 26 “*The EDGE-CALIFA Survey: Variations in the Molecular Gas Depletion Time in Local Galaxies*”
- [2] Bolatto, A. D., Wong, T., Utomo, D., Blitz, L., Vogel, S. N., Sánchez, S. F., Barrera-Ballesteros, J., Cao, Y., Colombo, D., Dannerbauer, H., García-Benito, R., Herrera-Camus, R., Husemann, B., Kalinova, V., Leroy, A. K., Leung, G., **Levy, R. C.**, Mast, D., Ostriker, E., Rosolowsky, E., Sandstrom, K. M., Teuben, P., van de Ven, G., Walter, F. 2017, *ApJ*, **846**, 159 “*The EDGE-CALIFA Survey: Interferometric Observations of 126 Galaxies with CARMA*”
- [1] Walter, F., Bolatto, A. D., Leroy, A. K., Veilleux, S., Warren, S. R., Hodge, J., **Levy, R. C.**, Meier, D. S., Ostriker, E. C., Ott, J., Rosolowsky, E., Scoville, N., Weiß, A., Zschaechner, L., Zwaan, M.



2017, [ApJ](#), 835, 265 “*Dense Molecular Gas Tracers in the Outflow of the Starburst Galaxy NGC 253*”