

# SHANY DANIELI

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## RESEARCH INTERESTS

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Galaxy formation and evolution; near-field cosmology; dwarf galaxies; ultra-diffuse galaxies; globular clusters; galactic dynamics; stellar populations; low surface brightness imaging and spectroscopy; astronomical surveys; instrumentation.

## EDUCATION & EMPLOYMENT

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NASA Hubble Fellow, Princeton University	2020-present
Carnegie-Princeton Fellow, Princeton University	2020-present
Member, Institute for Advanced Study	2020-2021
Ph.D, Physics, Yale University	Dec 2020
Advisor: Prof. Pieter van Dokkum	
M.Phil, Physics, Yale University	2015
M.Sc, Physics, Yale University	2014
B.Sc, Physics & Astronomy, <i>Magna Cum Laude</i> , Tel Aviv University	2013

## HONORS & AWARDS

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APS DAP Cecilia Payne-Gaposchkin Doctoral Dissertation Award in Astrophysics	2021
Carnegie-Princeton Research Fellowship	2020-2025
NASA Hubble Research Fellowship	2020-2023
CCAPP Price Prize in Cosmology and AstroParticle Physics	2019
Leigh Paige Award, Yale Physics Department	2013
Merit-based Memorial Scholarship, Tel Aviv University	2012
Honors Program for undergraduate students, Tel Aviv University	2010-2012
Dean's list, B.Sc in Physics (top 5%), Tel Aviv University	2012
Head of Intelligence Directorate Prize for Creativity, winning project for significant breakthroughs of intelligence	2009

## AWARDED TELESCOPE TIME

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PI and CO-I on more than 50 observational programs (~10 as PI) that were awarded >140 nights over the last 5 years. Telescopes and instruments include HST/ACS, Keck/KCWI, LRIS, and DEIMOS, Magellan-Baade/IMACS, Magellan-Baade/IFUM, Blanco/DECam, Chandra, Dragonfly, and Gemini.

## OBSERVING & INSTRUMENT EXPERIENCE

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Hubble Space Telescope: extensive experience with *HST*/ACS data.

The Keck Telescopes (KCWI, DEIMOS and LRIS): > 30 nights.

The Dragonfly Telephoto Array: operational lead (2017-2020); target selection; operations; staging and management; data reduction; data analysis.

Magellan Baade (IMACS): > 20 nights.

Magellan Clay (IFUM): 2 nights.

The Blanco Telescope (the Dark Energy Camera): > 30 nights.

## CURRENT & FORMER RESEARCH STUDENTS

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Shaunak Modak, Princeton University (2022-present, semester project), graduate student  
Vivek Vijayakumar, Princeton University (2022-present, Summer Research Program), undergraduate student  
Rebecca Ceppas de Castro, U. Toronto (2021-2022, semester project), undergraduate student  
Jingjing Gao, Princeton University (2021, Junior project), undergraduate student

## TEACHING, SERVICE AND LEADERSHIP

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Princeton Astrophysics Department & IAS, colloquium organizer	2022-2023
Journal Referee: ApJ, ApJS, MNRAS	2017-2022
Princeton University Astro Equity Committees (graduate admissions)	2020-2021
AAS 235th Meeting Special Session Organizer and Host	2020
Mentor, Banneker & Aztlán Summer Program, Harvard University	2016
Teaching Assistant, Phys 170, 171, 180, 200, Yale University	2013-2015
Mentor, Women In Science At Yale (WISAY), Yale	2013-2014
Teaching Assistant, Tel Aviv University	2010-2011

## INVITED / CONFERENCE TALKS

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IAU Symposium 377, Malaysia ( <i>invited</i> )	2023
Physics and Astronomy Colloquium, Dartmouth ( <i>invited</i> )	2023
Astrophysics Seminar, University of Pennsylvania ( <i>invited</i> )	2023
Astronomy Colloquium, UCLA ( <i>invited</i> )	2023
Physics Colloquium, The Weizmann Institute of Science ( <i>invited</i> )	2022
Physics Colloquium, Tel Aviv University ( <i>invited</i> )	2022
Astro Seminar, Tel Aviv University ( <i>invited</i> )	2022
Astro Seminar, The Center for Cosmology and Particle Physics, NYU ( <i>invited</i> )	2022
KIPAC-LSST Early-science Group, Stanford University ( <i>invited</i> )	2022
NASA Hubble Fellowship Program (NHFP) Symposium ( <i>contributed talk</i> )	2022
Astrophysics Seminar, Rutgers university ( <i>invited</i> )	2022
KICP Seminar, The University of Chicago ( <i>invited</i> )	2022
Aspen Conference: Galaxy Formation with Ancient Globular Star Clusters	2022
Bahcall Lunch, Princeton and the IAS	2022
Astronomy Colloquium, Caltech ( <i>invited</i> )	2021
Colloquium, David A. Dunlap Department of Astronomy and Astrophysics, CA ( <i>invited</i> )	2021
Astrophysics Colloquium, University of Bath, UK ( <i>invited</i> )	2021
NASA Hubble Fellowship Program (NHFP) Symposium	2021
Astrophysics Seminar, Weizmann Institute of Science, Israel ( <i>invited</i> )	2021
Astronomy Colloquium, NRC Herzberg Institute of Astrophysics, Victoria, CA ( <i>invited</i> )	2021
Astro Seminar, University of Kentucky ( <i>invited</i> )	2021
Cosmology and Extragalactic Seminar, UCL, UK ( <i>invited</i> )	2020
Particle Theory Seminar, Lawrence Berkeley National Laboratory ( <i>invited</i> )	2020
Colloquium, Swinburne University of Technology, Australia ( <i>invited</i> )	2020
Bahcall Lunch, Princeton and the IAS	2020
IAS Astro-Coffee	2020
NASA Hubble Fellowship Program (NHFP) Symposium	2020
KITP Conference - The Galaxy-Halo Connection Across Cosmic Time ( <i>invited review</i> )	2020
Snowmass Cosmic Frontier - Dark Matter: Cosmic Probes (panelist, <i>invited</i> )	2020
Astronomy and Astrophysics Seminar, Tel Aviv University, Israel ( <i>invited</i> )	2020
Astrolunch, The Hebrew University, Israel ( <i>invited</i> )	2020
Particle Physics Phenomenology Seminar, Tel Aviv University ( <i>invited</i> )	2020

Three talks at the AAS 235 meeting, Hawaii	2020
Astrophysics and Cosmology Seminar, Ben Gurion University, Israel ( <i>invited</i> )	2019
Subaru Telescope Anniversary, Hawaii	2019
Thunch talk, Princeton University	2019
KIPAC Tea, Stanford ( <i>invited</i> )	2019
Astronomy Department Lunch talk, UC Berkeley	2019
Astronomy Tea Talk, Caltech, CA	2019
Keck Science Meeting, UCLA	2019
Colloquium, UC Santa Cruz	2019
CCAPP Price Prize lecture, The Ohio State University ( <i>invited</i> )	2019
ITC Luncheon, Harvard University ( <i>invited</i> )	2019
Astronomy Seminar, University of connecticut ( <i>invited</i> )	2018
Lorentz Center workshop (two talks), Leiden ( <i>invited</i> )	2018
DES DR1 meeting, U.Chicago	2018
Cosmo Lunch - The Hebrew University	2017
Lunch Talk , Harvard University	2016
Lunch talk, Tel Aviv University, Israel	2016

## PUBLICATIONS (46 TOTAL, 9 AS LEAD AUTHOR)

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1. Modak, S., **Danieli, S.**, and Greene, J. E., “*Distinguishing Dark Matter Cusps from Cores using Globular Clusters*”, 2022, ApJ, submitted (arXiv: 2211.01384).
2. Li, J., Greene, J. E., Greco, J. P., Huang, S., Melchior, P., Beaton, R., Casey, K., **Danieli, S.**, Goulding, A., Joseph, R., Kado-Fong, E., Kim, J. H., MacArthur, L. A., “*Beyond Ultra-Diffuse Galaxies I: Mass-Size Outliers Among the Satellites of Milky Way Analogs*”, 2022, ApJ, submitted (arXiv: 2210.14994).
3. **Danieli, S.**, Greene, J. E., Carlsten, S., Jiang, F., Beaton, R., Goulding, A. D., “*ELVES IV: The Satellite Stellar-to-Halo Mass Relation Beyond the Milky-Way*”, 2022, ApJ, submitted (arXiv: 2210.14233).
4. Greene, J. E., **Danieli S.**, Beaton, R., Carlsten, S., Jiang, F., Li, J., “*ELVES III: Environmental Quenching by Milky Way-Mass Hosts*”, 2022, ApJ, submitted (arXiv: 2210.14237).
5. Li, J., Huang, S., Leauthaud, A., Moustakas, J., **Danieli, S.**, Greene, J.E., Abraham, R., Ardila, F., Kado-Fong, E., Lokhorst, D., Lupton, R., Price, P., “*Reaching for the Edge I: Probing the Outskirts of Massive Galaxies with HSC, DECaLS, SDSS, and Dragonfly*”, MNRAS, 515, 5335.
6. Keim, M.A., van Dokkum, P., **Danieli, S.**, Lokhorst, D., Li, J., Shen, Z., Abraham, R., Chen, S., Gilhuly, C., Liu, Q., Merritt, A., Miller, T.B., Pasha, I., Polzin, A., “*Tidal Distortions in NGC1052-DF2 and NGC1052-DF4: Independent Evidence for a Lack of Dark Matter*”, 2022, ApJ, 935, 160.
7. Li, D., Eadie, G. M., Abraham, R., Brown, P. E., Harris, W. E., Janssens, S. R., Romanowsky, A.J. ; van Dokkum, P., **Danieli, S.**, “*Light from the Darkness: Detecting Ultra-Diffuse Galaxies in the Perseus Cluster through Over-densities of Globular Clusters with a Log-Gaussian Cox Process*”, 2022, ApJ, 935, 3.
8. van Dokkum, P., Shen, Z., Romanowsky, A. J., Abraham, R., Conroy, C., Danieli, S., Dutta Chowdhury, D., Keim, M. A.; Kruijssen, J. M. D., Leja, J., Trujillo-Gomez, S., “*Monochromatic globular clusters as a critical test of formation models for the dark matter deficient galaxies NGC1052-DF2 and NGC1052-DF4*”, 2022, ApJL, in press.
9. Carlsten, S. G., Greene, J. E., Beaton, R. L., **Danieli, S.**, Greco, J. P., “*The Exploration of Local Volume Satellites (ELVES) Survey: A Nearly Volume-Limited Sample of Nearby Dwarf Satellite Systems*”, 2022, ApJ, 933, 47.
10. Bar, N., **Danieli, S.**, Blum, K., “*Dynamical friction in globular cluster-rich ultra-diffuse galaxies: the case of NGC5846-UDG1*”, 2022, ApJL, 932, 10.
11. Gilhuly, C., Merritt, A., Abraham, R., **Danieli, S.**, Lokhorst, D., Liu, Q., van Dokkum, P., Conroy, C., Greco, J., “*Stellar halos from The Dragonfly Edge-on Galaxies Survey*”, 2022, ApJ, 932, 44.
12. van Dokkum, P., Shen, Z., Keim, M.A., Trujillo-Gomez, S., **Danieli, S.**, Dutta Chowdhury, D., Abraham, R., Conroy, C., Kruijssen, J. M. D; Nagai, D., Romanowsky, A., “*A trail of dark matter-free galaxies from a bullet dwarf collision*”, 2022, Nature, 605, 435.

13. Greene, J. E., Greco, J.P.; Goulding, A.D., Huang, S., Kado-Fong, E., **Danieli, S.**, Li, J., Kim, J., Hoon; K.Y., Leauthaud, A., MacArthur, L. A.; Sifon, C., “The Nature of Low Surface Brightness Galaxies in the Hyper Suprime-Cam Survey”, 2022, ApJ, 933, 2.
14. **Danieli, S.**, van Dokkum, P., Trujillo-Gomez, S., Kruijssen, J. M. D., Romanowsky, A. J., Carlsten, S., Shen, Z., Li, J., Abraham, R., Brodie, J., Conroy, C., Gannon, J. S. Greco, J., “*NGC 5846-UDG1: A Galaxy Formed Mostly by Star Formation in Massive, Extremely Dense Clumps of Gas*”, 2022, ApJL, 927, 28.
15. Lokhorst, D., Abraham, R., Pasha, I., van Dokkum, P., Chen, S., Miller, T., **Danieli, S.**, Greco, J., Zhang, J., Merritt, A., Conroy, C., “*A Giant Shell of Ionized Gas Discovered near M82 with the Dragonfly Spectral Line Mapper Pathfinder*”, 2022, ApJ, 927, 136.
16. Moreno, J., **Danieli, S.**, Bullock, J. S., Feldmann, R., Hopkins, P. F., et al., “*Galaxies lacking dark matter produced by close encounters in a cosmological simulation*”, 2022, Nature Astronomy, 6, 496.
17. Liu, Q., Abraham, R., Gilhuly, C., van Dokkum, P., Martin, P.G., Li, J., Greco, J.P., Lokhorst, D., Chen, S., **Danieli, S.**, Keim, M.A., Merritt, A., Miller, T.B., Pasha, I., Polzin, A, Shen, Z, Zhang, J. , “*A Method To Characterize the Wide-Angle Point Spread Function of Astronomical Images*”, 2022, ApJ, 925, 219.
18. Villaume, A., Romanowsky, A. J., Brodie, J., van Dokkum, P., Conroy, C., Forbes, D. A.; **Danieli, S.**, Martin, C., Matuszewski, M., “*Spatially Resolved Stellar Spectroscopy of the Ultra-diffuse Galaxy Dragonfly 44. III. Evidence for an Unexpected Star Formation History under Conventional Galaxy Evolution Processes*”, 2022, ApJ, 924, 32.
19. Pasha, I., Lokhorst, D., van Dokkum, P., Chen, S., Abraham, R., Greco, J., **Danieli, S.**, Miller, T., Lippitt, E., Polzin, A., Shen, Z., Keim, M., Liu, Q., Merritt, A., Zhang, J., “*A Nascent Tidal Dwarf Galaxy Forming within the Northern H I Streamer of M82*”, ApJL, 2021, 923, 21.
20. Greco, J.P. and **Danieli, S.**, “*ArtPop: A Stellar Population and Image Simulation Python Package*”, 2022, ApJ, in press (arXiv: 2109.13943).
21. Greene, J.E., Lancaster, L., Ting, Y-S, Kopolov, S.E., **Danieli, S.**, Huang, S., Jiang, F., Greco, J.P., Strader, J., “*A Search for Wandering Black Holes in the Milky Way with Gaia and DECaLS*”, 2021, ApJ, 917, 1, 17.
22. Polzin, A., van Dokkum, P., **Danieli, S.**, Greco, J.P., Romanowsky, A. J., “*A recently quenched isolated dwarf galaxy outside of the Local Group environment*”, 2021, ApJL, 914, 1, 23.
23. Shen, Z., **Danieli, S.**, van Dokkum, P., Abraham, R., Brodie, J.P., Conroy, C., Dolphin, A.E., Romanowsky, A.J., Kruijssen, J. M. D., Dutta C.D., “*A Tip of the Red Giant Branch Distance of  $22.1 \pm 1.2$  Mpc to the Dark Matter Deficient Galaxy NGC1052-DF2 from 40 Orbits of Hubble Space Telescope Imaging*”, 2021, ApJL, 914, 1, 12.
24. Shen, Z., van Dokkum, P., **Danieli, S.**, “*A Complex Luminosity Function for the Anomalous Globular Clusters in NGC1052-DF2 and NGC1052-DF4*”, 2020, ApJ, 909, 179.
25. Miller, T.B., van Dokkum, P., **Danieli, S.**, Li, J., Abraham, R., Conroy, C., Gilhuly, C., Greco, J.P., Liu, Q., Lokhorst, D., Merritt, A., “*The Dragonfly Wide Field Survey. II. Accurate Total Luminosities and Colors of Nearby Massive Galaxies and Implications for the Galaxy Stellar Mass Function*”, 2021, ApJ, 909, 74.
26. Greco, J.P., van Dokkum, P., **Danieli, S.**, Carlsten, S.G., Conroy, C., “*Measuring distances to low-luminosity galaxies using surface brightness fluctuations*”, 2020, ApJ, 908, 24.
27. van Dokkum, P., Lokhorst, D., **Danieli, S.**, Li, J., Merritt, A., Abraham, R., Gilhuly, C., Greco, J.P., Liu, Q., “*Multi-resolution Filtering: An Empirical Method for Isolating Faint, Extended Emission in Dragonfly Data and Other Low Resolution Images*”, 2020, PASP, 132, 4503.
28. Gilhuly, C., Hendel, D., Merritt, A., Abraham, R., **Danieli, S.**, Lokhorst, D., van Dokkum, P., Conroy, C., Greco, J.P., “*The Dragonfly Edge-on Galaxies Survey: Shaping the Outer disk of NGC 4565 via Accretion*”, 2020, ApJ, 897, 108.
29. **Danieli, S.**, van Dokkum, P., Conroy, C., Abraham, R., Romanowsky, A.J. and Dolphin, A., “*The Tip of the Red Giant Branch Distance to the Dark Matter Deficient Galaxy NGC1052-DF4 from Deep HST data*”, 2020, ApJL, 895, 4.
30. **Danieli, S.**, Lokhorst, D., van Dokkum, P., Abraham, R., Conroy, C., Merritt, A., Greco, J.P., Gilhuly, C., Zhang, J. and Miller, T., “*The Dragonfly Wide Field Survey. I. Telescope, Survey Design and Data Characterization*”, 2020, ApJ, 894, 119.

31. Wasserman, A., van Dokkum, P., Romanowsky, A.J., Brodie, J., **Danieli, S.**, Forbes, D.A., et al., “*Spatially Resolved Stellar Kinematics of the Ultra-diffuse Galaxy Dragonfly 44. II. Constraints on Fuzzy Dark Matter*”, 2019, ApJ, 885, 155.
32. van Dokkum, P., Gilhuly, C. Bonaca, A., Merritt, A., **Danieli, S.**, Lokhorst, D., Abraham. R., Conroy, C., Greco, J.P., “*Dragonfly Imaging of the Galaxy NGC5907: a revised view of the iconic stellar stream*”, 2019, ApJL, 883, 32.
33. van Dokkum, P., Wasserman, A., **Danieli, S.**, Abraham, R., Brodie, J., Conroy, C., Forbes, D., Martin, C., Matuszewski, M., Romanowsky, A.J., Villaume, A., “*Spatially Resolved Stellar Kinematics of the Ultra-diffuse Galaxy Dragonfly 44. I. Observations, Kinematics, and Cold Dark Matter Halo Fits*”, 2019, ApJ, 880, 91.
34. **Danieli, S.** and van Dokkum, P., “*Revisiting the Size-Luminosity Relation in the Era of Ultra Diffuse Galaxies*”, 2019, ApJ, 875, 2.
35. **Danieli, S.**, van Dokkum, P., Conroy, C., Abraham, R. and Romanowsky, A.J., “*Still Missing Dark Matter: KCWI High-Resolution Stellar Kinematics of NGC1052-DF2*”, 2019, ApJL, 874, 12.
36. van Dokkum, P., **Danieli, S.**, Abraham, R., Conroy, C. and Romanowsky, A.J., “*A Second Galaxy Missing Dark Matter in the NGC1052 Group*”, 2019, ApJL, 874, 5.
37. Cohen, Y., van Dokkum, P., **Danieli, S.**, Romanowsky, A.J., Abraham, R., Merritt, A., Zhang, J., Mowla, L., Kruijssen, J. M. D., Conroy, C., Wasserman, A., “*The Dragonfly Nearby Galaxies Survey. V. HST/ACS Observations of 23 Low Surface Brightness Objects in the Fields of NGC1052, NGC1084, M96, and NGC4258*”, 2018, ApJ, 868, 96.
38. van Dokkum, P., **Danieli, S.**, Cohen, Y., Romanowsky, A.J, Conroy, C., “*The Distance of the Dark Matter Deficient Galaxy NGC 1052—DF2*”, 2018, ApJ, 864, 18.
39. Wasserman, A. , Romanowsky, A.J., Brodie, J., van Dokkum, P., Conroy, C., Abraham, R., Cohen, Y., **Danieli, S.** , “*A Deficit of Dark Matter from Jeans Modeling of the Ultra-diffuse Galaxy NGC 1052-DF2*”, 2018, ApJ, 863, 15.
40. van Dokkum, P., Cohen, Y., **Danieli, S.**, Kruijssen, J. M. D., Romanowsky, A. J., Merritt, A., Abraham, R., Brodie, J., Conroy, C., Lokhorst, D., Mowla, L., O’Sullivan, E., Zhang, J., “*An Enigmatic Population of Luminous Globular Clusters in a Galaxy Lacking Dark Matter*”, 2018, ApJ, 856, 30.
41. van Dokkum, P., **Danieli, S.**, Cohen, Y., Merritt, A, Romanowsky, A.J., Abraham, R., Brodie, J., Conroy, C., Lokhorst, D., Mowla, L., O’Sullivan, E., Zhang, J., “*A galaxy lacking dark matter*”, 2018, Nature, 555, 629.
42. **Danieli, S.**, van Dokkum, P. and Conroy, C., “*Hunting Faint Dwarf Galaxies in the Field Using Integrated Light Surveys*”, 2018, ApJ, 856, 69.
43. van Dokkum. P., Abraham, B., Romanowsky, A.J., Brodie, J., Conroy, C., **Danieli, S.**, Lokhorst, D., Merritt, A., Mowla. L., Zhang, J., “*Extensive Globular Cluster Systems Associated with Ultra Diffuse Galaxies in the Coma Cluster*”, 2017, ApJL, 844, 11.
44. **Danieli, S.**, van Dokkum, P., Merritt, A., Abraham, R., Zhang, J., Karachentsev, I. D., and Makarova, L. N. “*The Dragonfly Nearby Galaxies Survey. III. The Luminosity Function of the M101 Group*”, 2017, ApJ, 837, 136.
45. Merritt, A., van Dokkum, P., **Danieli, S.**, Abraham, R., Zhang, J., Karachentsev, I. D., and Makarova, L. N., “*The Dragonfly Nearby Galaxies Survey. II. Ultra-Diffuse Galaxies near the Elliptical Galaxy NGC 5485*”, 2016, ApJ, 833, 168.
46. van Dokkum, P., Abraham, R., Brodie, J., Conroy, C., **Danieli, S.**, Merritt, A., Mowla, L., Romanowsky, A., Zhang, J., “*A High Stellar Velocity Dispersion and ~100 Globular Clusters for the Ultra-diffuse Galaxy Dragonfly 44*”, 2016, ApJL, 828, L6.

## WORK EXPERIENCE

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Analysis Officer, exclusive team in the Analysis & Research Department	2004-2008
Head of training section, Analysis & Research Department, Military Intelligence Directorate, IDF	2008-2009
Physicist and analyst, Prime Minister’s Office, Israel	2011-2013