

KAREEM EL-BADRY

Institute for Theory and Computation
kareem.el-badry@cfa.harvard.edu

Harvard-Smithsonian Center for Astrophysics
kareemelbadry.github.io

RESEARCH INTERESTS

binary stars, stellar mass black holes, white dwarfs;
near-field cosmology, galactic archaeology, globular clusters;
galaxy formation, low-mass galaxies, stellar feedback

EDUCATION

| | |
|---|------|
| Ph.D., Astrophysics, University of California, Berkeley | 2021 |
| Advisors: Eliot Quataert, Dan Weisz | |
| M.A., Astrophysics, University of California, Berkeley | 2018 |
| B.S., Astronomy & Physics, <i>summa cum laude</i> , Yale University | 2016 |
| Advisor: Marla Geha | |

RESEARCH POSITIONS

| | |
|---|-------------|
| Assistant Professor, California Institute of Technology | 2023– |
| Junior Fellow, Harvard Society of Fellows | 2021– |
| ITC Fellow, Harvard-Smithsonian Center for Astrophysics | 2021– |
| Postdoctoral Fellow, recurring summer appointment, MPIA, Heidelberg | 2021– |
| Graduate Student, University of California, Berkeley | 2016 – 2021 |
| Kavli Summer Research Fellow, CCA, NYC | 2018 |
| Summer Visiting Researcher, MPIA, Heidelberg | 2017 – 2020 |
| Summer Undergraduate Research Fellow, Caltech | 2015 |
| Undergraduate Research Assistant, Yale | 2015 – 2016 |
| Dean's Summer Research Fellow, Yale | 2014 |

HONORS & AWARDS

| | |
|--|-------------|
| IAU Ph.D. Prize, Stars and Stellar Physics division | 2022 |
| Mary Elizabeth Uhl Dissertation Prize, Berkeley | 2021 |
| Outstanding Graduate Student Instructor Award, Berkeley | 2021 |
| Robert J. Trumpler Graduate Student Excellence Award, Berkeley | 2020 |
| CCAPP Prize in Cosmology and AstroParticle Physics | 2018 |
| NSF Graduate Research Fellowship | 2016 – 2021 |
| Berkeley Fellowship | 2016 – 2018 |
| Hellman Award for Graduate Study | 2016 – 2018 |
| George Beckwith Prize in Astronomy, Yale | 2016 |
| Phi Beta Kappa, Yale | 2015 |
| Jerry Inskeep Memorial Scholarship, Yale | 2014 |

AWARDED TELESCOPE TIME (SUMMARY)

| | |
|--|-----------------------------------|
| Magellan 6.5m | 9 nights (PI) + 3 nights (CO-I) |
| HST | 8 orbits (PI) + 68 orbits (CO-I) |
| LBT 2×8.4 m | 3 nights (PI) + 3 nights (CO-I) |
| Keck 10m | 10 nights (PI) + 25 nights (CO-I) |
| Palomar Hale 200 inch | 2 nights (PI) + 25 nights (CO-I) |
| MPG/ESO La Silla 2.2m | 40 nights (PI) + 30 nights (CO-I) |
| Las Cumbres Observatory 2×1 m | 1.5 nights (PI) |
| Tillinghast 1.5m FLWO | 24 nights (PI) |
| Lick Shane 3m | 26 nights (PI) |
| Lick APF 2.4m | 5 nights (CO-I) |
| Nordic Optical Telescope 2.6m | 12 nights (CO-I) |

| | |
|---|-----------------------------------|
| NTT 3.6m | 3 nights (CO-I) |
| McDonald 2.7m Harlan J. Smith Telescope | 5 nights (CO-I) |
| Gemini 8.1m | 20 hours (PI) |
| VLT 8.2m | 16 hours (PI) + 3 hours (DDT; PI) |
| Very Large Array | 4 hours (DDT; CO-I) |
| MeerKAT | 4 hours (DDT; CO-I) |
| Chandra | 20ks (DDT; PI) + 20ks (DDT; CO-I) |

OBSERVING EXPERIENCE

| | |
|--|-----------------------|
| Public data – significant experience with data from Gaia, Kepler/K2, TESS, LAMOST, SDSS, ZTF | |
| Lick Shane telescope, KAST Spectrograph – 28 nights | 2020-2021 |
| Keck DEIMOS – 2.5 nights | 2017 |
| Keck ESI – 7 nights | 2015, 2016, 2021-2023 |
| Keck LRIS – 3 nights | 2021-2023 |
| Keck HIRES – 1 night | 2022 |
| Palomar Hale telescope, DBSP – 3 nights | 2021-2023 |
| Palomar Hale telescope, Wide-Field IR Camera – 1 night | 2015 |
| WIYN, Hydra Multi-Fiber Spectrograph – 2 nights | 2014 |
| Arecibo, L-Band HI – 2 nights | 2013, 2014 |

JOURNAL REFEREE

| | |
|--|-------------------------|
| A&A, A&AL, ApJ, ApJL, MNRAS, MNRASL, SCPMA, Nature Astronomy | 29 papers total; 2017 – |
|--|-------------------------|

STUDENT MENTORING

| | |
|--|-------------|
| Natsuko Yamaguchi (Caltech PhD student) | 2022 – |
| Pranav Nagarajan (Caltech PhD student) | 2020 – |
| Jesse Han (Harvard PhD student) | 2022 – |
| Rhys Seeburger (MPIA PhD student) | 2021 – |
| Vedant Chandra (Harvard PhD student) | 2021 – |
| Silvia Almada (MPIA masters student) | 2020 – 2022 |
| Nick Choksi (Berkeley undergrad; now Berkeley PhD student) | 2018 – 2019 |

TEACHING EXPERIENCE

| | |
|--|------------------|
| Graduate Student Instructor, Astro 128, <i>Astronomy Data Lab</i> , University of California, Berkeley | 2019, 2020, 2021 |
| Course Designer, Astro 128, <i>Astronomy Data Lab</i> , University of California, Berkeley | 2018, 2019, 2020 |
| Co-Instructor, Astro 375, <i>Graduate Pedagogy</i> , University of California, Berkeley | 2019, 2020 |
| Sole Instructor, <i>Stellar Physics</i> , Hyeonpung High School, Daegu, South Korea | 2019 |
| Graduate Student Instructor, Astro 160, <i>Stellar Physics</i> , University of California, Berkeley | 2018 |
| Graduate Student Instructor, Astro 7A, <i>Introduction to Astronomy</i> , University of California, Berkeley | 2017 |
| Graduate Student Instructor, Astro C12, <i>The Planets</i> , University of California, Berkeley | 2017 |
| Tutor & Grader, Math 120, <i>Multivariable Calculus</i> , Yale | 2013 – 2016 |
| Tutor, Math 111, <i>College Algebra</i> , Umpqua Community College | 2013 |

TALKS (LAST 5 YEARS)

| | |
|--|------|
| Astrophysics colloquium, Boston University | 2023 |
| Astrophysics colloquium, Cornell University | 2023 |
| Astrophysics colloquium, University of Pennsylvania | 2023 |
| Astrophysics colloquium, University of Michigan | 2022 |
| Talk, KITP white dwarf conference, Santa Barbara, CA | 2022 |
| Astrophysics colloquium, Dunlap Institute, University of Toronto | 2022 |
| Astrophysics colloquium, Yale University | 2022 |
| Talk, ZTF theory network meeting, CA | 2022 |
| Talk, EUROWD22, Tübingen, Germany | 2022 |

| | |
|--|------|
| Galaxy coffee, Max Planck Institute for Astronomy, Heidelberg, Germany | 2022 |
| Astrophysics colloquium, Shanghai Astronomical Observatory | 2022 |
| Astrophysics colloquium, University of California, Los Angeles | 2022 |
| IAU working group on active B stars seminar | 2022 |
| Albert Einstein Institute seminar, Potsdam, Germany | 2022 |
| UCSD/SDSU joint colloquium, San Diego | 2021 |
| Harvard Society of Fellows lunch talk, Harvard University | 2021 |
| Stellar Astrophysics Center seminar, Aarhus University, Aarhus, Denmark | 2021 |
| Astrophysics colloquium, Massachusetts Institute of Technology | 2021 |
| Institute of Theory and Computation colloquium, Harvard University | 2021 |
| Königstuhl colloquium, Max Planck Institute for Astronomy, Heidelberg, Germany | 2021 |
| Astrophysics colloquium, CIERA center, Northwestern University | 2021 |
| Astronomy seminar, University of Warwick, UK | 2021 |
| Lunch talk, University of California, Berkeley | 2021 |
| Astronomy colloquium, University of California, Berkeley | 2021 |
| Astronomy colloquium, California Institute of Technology | 2021 |
| Astronomy colloquium, University of Chicago | 2021 |
| Physics colloquium, University of Utah | 2021 |
| Lunch talk, University of California, Berkeley | 2020 |
| Tea talk, California Institute of Technology | 2020 |
| CIERA seminar, Northwestern University | 2020 |
| Summer astrophysics colloquium, Princeton University | 2020 |
| Galaxy coffee, Max Planck Institute for Astronomy, Heidelberg, Germany | 2020 |
| Lunch talk, University of California, Berkeley | 2020 |
| Astronomy seminar, Center for Computational Astrophysics, NYC | 2020 |
| Talk, ZTF theory meeting | 2020 |
| Astronomy seminar, University of Chicago | 2019 |
| Tea talk, Kavli Institute for Particle Astrophysics and Cosmology, Stanford University | 2019 |
| Lunch talk, University of California, Berkeley | 2019 |
| Astronomy seminar, Boston University | 2019 |
| Galaxies and cosmology seminar, Center for Astrophysics, Harvard University | 2019 |
| Tea talk, California Institute of Technology | 2019 |
| Invited talk, The Milky Way 2019: LAMOST and other Leading Survey meeting, Yichang, China | 2019 |
| Astronomy seminar, Charles University, Prague, Czech Republic | 2019 |
| Contributed talk, Universe of Binaries meeting, Telč, Czech Republic | 2019 |
| Contributed talk, CosmoDwarfs meeting, Durham, UK | 2019 |
| Galaxy coffee, Max Planck Institute for Astronomy, Heidelberg, Germany | 2019 |
| Lunch talk, University of California, Berkeley | 2019 |
| FLASH seminar, UC Santa Cruz | 2019 |
| Cosmology seminar, UC Davis | 2019 |
| Invited talk, Lorentz Center workshop on globular clusters, Leiden, Netherlands | 2019 |
| Invited talk, Near/Far workshop, Napa, CA | 2018 |
| Lunch talk, University of California, Berkeley | 2018 |
| Grad student+postdoc seminar, University of California, Berkeley | 2018 |
| CCAPP Prize Prize colloquium, Ohio State University | 2018 |
| Invited talk, Galactic angular momentum focus group, IAU, Vienna, Austria | 2018 |
| Contributed talk, Kavli Summer Program in Astrophysics, Center for Computational Astrophysics, NYC | 2018 |
| Lunch talk, Center for Computational Astrophysics, NYC | 2018 |
| Galaxy coffee, Max Planck Institute for Astronomy, Heidelberg, Germany | 2018 |
| Galaxy lunch, Yale University | 2018 |
| Grad student+postdoc seminar, University of California, Berkeley | 2018 |
| Lunch talk, University of California, Berkeley | 2018 |
| Invited talk, Near/Far workshop, Napa, CA | 2017 |
| Lunch talk, University of California, Berkeley | 2017 |
| SFB seminar, ARI, Heidelberg, Germany | 2017 |
| Galaxy coffee, Max Planck Institute for Astronomy, Heidelberg, Germany | 2017 |
| Contributed poster, Galaxy-Halo Connection Workshop, KITP | 2017 |
| Grad student+postdoc seminar, University of California, Berkeley | 2017 |
| Lunch talk, University of California, Berkeley | 2017 |

REFEREED PUBLICATIONS (88 TOTAL; 28 FIRST-AUTHOR)

h-index: 36 (all papers), 20 (first-author papers)

citations: 3300+ (all papers), 1500+ (first-author papers)

88. Burdge, K., **El-Badry, K.**, Rappaport, S., Wong, T. L. S., Bauer, E. B., Bildsten, L., Caiazzo, I., Chakrabarty, D., Chickles, E., Graham, M. J., Kara, E., Kukarni, S. R., Marsh, T. R., Nynka, M., Prince, T. A., Simcoe, R. A., van Roestel, J., Vanderbosch, Z., Bellm, E. C., Dekany, R. G., Drake, A. J., Helou, G., Masci, F. J., Milburn, J., Riddle, R., Rusholme, B., Smith, R., 2023, “Orbital decay in an accreting and eclipsing 13.7 minute orbital period binary with a luminous donor”, arXiv:2303.13573, ApJL, submitted.
87. Andrae, R., and **El-Badry, K.**, “Constraints on the cosmological coupling of black holes from Gaia”, A&AL, submitted.
86. **El-Badry, K.**, Rix, H.-W., Cendes, Y., Rodriguez, A. C., Conroy, C., Quataert, E., Hawkins, K., Zari, E., Hobson, M., Breivik, K., Rau, A., Berger, E., Shahaf, S., Seeburger, R., Burdge, K. B., Latham, D. W., Buchhave, L. A., Bieryla, A., Bashi, D., Mazeh, T., Faigler, S., “A red giant orbiting a black hole”, arXiv:2302.07880, MNRAS, 521, 4323.
85. Hopkins, P. F., Gurvich, A. B., Shen, X., Hafen, Z., Grudic, M. Y., Kurinchi-Vendhan, S., Hayward, C. C., Jiang, F., Orr, M. E., Wetzel, A., Kereš, D., Stern, J., Faucher-Giguère, C.-A., Bullock, J., Wheeler, C., **El-Badry, K.**, Loebman, S. R., Moreno, J., Boylan-Kolchin, M., Quataert, E., 2022, “What causes the formation of disks and end of bursty star formation?”, arXiv:2301.08263, MNRAS, submitted.
84. Green, M. J., Maoz, D., Mazeh, T., Faigler, S., Shahaf, S., Gomel, R., **El-Badry, K.**, Rix, H.-W., 2022, “15,000 ellipsoidal binary candidates in TESS: Orbital periods, binary fraction, and tertiary companions”, arXiv:2211.06194, MNRAS, in press.
83. Burdge, K., **El-Badry, K.**, Marsh, T., Rappaport, S., Brown, W., Caiazzo, I., Chakrabarty, D., Dhillon, V., Fuller, J., Gaensicke, B., Graham, M., Kara, E., Kulkarni, S., Littlefair, S., Mroz, P., Rodriguez-Gil, P., van Roestel, J., Simcoe, R., Bellm, E., Drake, A., Dekany, R., Masci, F., Riddle, R., Smith, R., Prince, T., 2022, “A dense 0.1 M_{\odot} star in a 51-minute orbital period eclipsing binary”, arXiv:2210.01809, Nature, in press.
82. **El-Badry, K.**, Rix, H.-W., Quataert, E., Howard, A. W., Isaacson, H., Fuller, J., Hawkins, K., Breivik, K., Wong, K. W. K., Rodriguez, A. C., Conroy, C., Shahaf, S., Mazeh, T., Arenou, F., Burdge, K. B., Bashi, D., Faigler, S., Weisz D. R., Seeburger, R., Almada Monter, S., Wojno, J., 2022, “A Sun-like star orbiting a black hole”, arXiv:2209.06833, MNRAS, 518, 1057.
81. Toloza, O., Gänsicke, B. T., Guzmán-Rincón, L. M., Marsh, T. R., Szkody, P., Schreiber, M. R., de Martino D., Zorotovic, M., **El-Badry, K.**, Koester, D., Lagos, F., 2022, “The C/N ratio from FUV spectroscopy as a constraint upon the past evolution of HS 0218+3229”, arXiv:2209.06873, MNRAS, submitted.
80. Shahaf, S., Bashi, D., Mazeh, T., Faigler, S., Arenou, F., **El-Badry, K.**, Rix, H.-W., 2022, “Triage of the Gaia astrometric orbits. I. A sample of binaries with probable compact companions”, arXiv:2209.00828, MNRAS, 518, 2991.
79. Gull, M., Weisz, D. R., Senchyna, P., Sandford, N. R., Choi, Y., Mcleod, A. F., **El-Badry, K.**, Gotberg, Y., Gilbert, K. M., Boyer, M., Dalcanton, J. J., Guhathakurta, P., Goldman, S., Marigo, P., McQuinn, K., Pastorelli, G., Stark, D. P., Skillman, E., Ting, Y.-S., Williams, B. F., 2022, “A panchromatic study of massive stars in the extremely metal-poor local group dwarf galaxy Leo A”, arXiv:2211.14349, ApJ, 941, 206.
78. **El-Badry, K.**, Conroy, C., Fuller, J., Kiman, R., van Roestel, J., Kiman, R., Rodriguez, A. C., Burdge, K., 2022, “Magnetic braking saturates: evidence from the period distribution of low-mass eclipsing binaries from ZTF”, arxiv:2208.05488, MNRAS, 517, 4916.
77. Bashi, D., Shahaf, S., Mazeh, T., Faigler, S., Subo, D., **El-Badry, K.**, Rix, H.-W., Jorissen, A., 2022, “Gaia spectroscopic orbits validated with LAMOST and GALAH radial velocities”, arxiv:2207.08832, MNRAS, 517, 3888.
76. **El-Badry, K.**, and Rix, H.-W., 2022, “What are the spectroscopic binaries with high mass functions near the *Gaia* DR3 main sequence?”, arXiv:2206.07723, MNRAS, 515, 1266.

75. Rodriguez, A. C., Kulkarni, S. R., Prince, T. A., Szkody, P., Burdge, K. B., Caiazzo, I., van Roestel, J., Vanderbosch, Z. P., **El-Badry, K.**, Bellm, E. C., Gansicke, B. T., Graham, M. J., Mahabal, A. A., Masci, F. J., Mroz, P., Riddle, R., Rusholme, B., 2022, “Discovery of Two Polars from a Crossmatch of ZTF and the SRG/eFEDS X-ray Catalog”, arXiv:2206.04714, ApJ, submitted.
74. Fitzmaurice, E., Martin, D. V., Martinez, R. R., Valley, P., Stephan, A. P., Boley, K. M., Pogge, R., **El-Badry, K.**, Kunovac, V., Triaud, A. H. M. J., 2022, “Spectroscopy of TOI-1259B - an unpolluted white dwarf companion to an inflated warm Saturn”, arXiv:2206.01259, MNRAS, 518, 636.
73. Hwang, H.-C., **El-Badry, K.**, Rix, H.-W., Hamilton, C., Ting, Y.-S., Zakamska, N., 2022, “Wide twin binaries are extremely eccentric: evidence of twin binary formation in circumbinary disks”, arXiv:2205.05690, ApJL, 933, 32.
72. Jayasinghe, T., Thompson, T. A., Kochanek, C. S., Stanek, K. Z., Rowan, D. M., Martin, D. V., **El-Badry, K.**, Valley, P. J., Hinkle, J. T., Huber, D., Isaacson, H., Tayar, J., Auchettl, K., Ilyin, I., Howard, A. W., Badenes, C., 2022, “The ‘Giraffe’: Discovery of a stripped red giant in an interacting binary with a $\sim 2 M_{\odot}$ lower giant”, arXiv: 2201.11131, MNRAS, 516, 5945.
71. Shenar, T., Sana, H., Mahy, L., **El-Badry, K.**, Marchant, P., Langer, N., Hawcroft, C., Fabry, M., Sen, K., Almeida, L., Abdul-Masih, M., Bodensteiner, J., Crowther, P., Gieles, M., Gromadzki, M., Henault-Brunet, V., Herrero A., de Koter, A., Iwanek, P., Kozłowski, S., Lennon, D., Apellaniz, J., Mroz, P., Moffat, A., Picco, A., Pietrukowicz, P., Poleski, R., Rybicki, K., Schneider, F., Skowron, D., Skowron, J., Soszynski, I., Szymanski, M., Toonen, S., Udalski, A., Ulaczyk, K., Vink, J., Wrona, M., 2022, “An X-ray quiet black hole born with a negligible kick in a massive binary of the Large Magellanic Cloud”, arXiv:2207.07675, Nature Astronomy, 6, 1085.
70. Sameie, O., Boylan-Kolchin, M., Hopkins, P.F., Wetzel, A., Ma, X., Bullock, J., **El-Badry, K.**, Quataert, E., Samuel, J., Schauer, A., Weisz, D., 2022, “Formation of proto-globular cluster candidates in cosmological simulations of dwarf galaxies at $z > 4$ ”, arXiv:2204.00638, MNRAS, submitted.
69. Heintz, T., Hermes, J.J., **El-Badry, K.**, Walsh, C., van Saders, J. L., Fields, C., Koester, D., 2022, “Testing white dwarf age estimates using wide double white dwarf binaries from Gaia eDR3”, arXiv:2206.00025, ApJ, 934, 148.
68. **El-Badry, K.**, Seeburger, R., Jayasinghe, T., Rix, H.-W., Almada, S., Conroy, C., Price-Whelan, A., Burdge, 2022, “Unicorns and Giraffes in the binary zoo: stripped giants with subgiant companions”, arXiv:2203.06348, MNRAS, 512, 5620.
67. Wetzel, A., Hayward, C. C., Sanderson, R. E., Ma, X., Angles-Alcazar, D., Feldmann, R., Chan, T.K., **El-Badry, K.**, Wheeler, C., Garrison-Kimmel, S., Nikakhtar, F., Panithanpaisal, N., Arora, A., Gurvich, A. B., Samuel, J., Sameie, O., Pandya, V., Hummels, C., Loebman, S., Boylan-Kolchin, M., Bullock, J. S., Faucher-Giguère, C.-A., Kereš, D., Quataert, E., Hopkins, P. F., 2022, “Public data release of the FIRE-2 cosmological zoom-in simulations of galaxy formation”, arXiv:2202.06969, MNRAS, submitted.
66. Hafen, Z., Stern, J., Bullock, J., Gurvich, A. B., Yu, S., Faucher-Giguère, C.-A., Fielding, D. B., Angles-Alcazar, D., Quataert, E., Wetzel, A., Starkenburg, T., Boylan-Kolchin, M., Moreno, J., Feldmann, R., **El-Badry, K.**, Chan, T. K., Trapp, C., Kereš, D., Hopkins, P. F., 2022, “Hot-mode accretion and the physics of thin-disk galaxy formation”, arXiv:2201.07235, MNRAS, 514, 5056.
65. **El-Badry, K.**, Conroy, C., Quataert, E., Rix, H.-W., Labadie-Bartz, J., Jayasinghe, T., 2021, Thompson, T., Cargile, P., Stassun, K. G., Ilyin, I., 2022, “Birth of a Be star: an APOGEE search for Be stars forming through binary mass transfer”, arXiv: 2201.05614, MNRAS, 516, 3602.
64. **El-Badry, K.**, Burdge, K., Mróz, P., 2021, “NGC 2004 #115: A black hole imposter containing 3 luminous stars”, arXiv: 2112.05030, MNRAS, 511, 3089.
63. Kulkarni, S. R., Harrison, F. A., Grefenstette, B. W., Earnshaw, H. P., Andreoni, I., Berg, D. A., Bloom, J. S., Cenko, B. S., Chornock, R., Christiansen, J. L., Coughlin, M. W., Criswell, A. W., Darvish, B., Das K. K., De, K., Dessart, L., Dixon, D., Dorsman, B., **El-Badry, K.**, Evans, C., Saavik Ford, K. E., Fremling, C., Gansicke, B. T., Gezari, S., Gotberg, Y., Green, G. M., Graham, M. J., Heida, M., Ho, A. Y. Q., D. Jaodand, A. D., Johns-Krull, C. M., Kasliwal, M. M., Lazzarini, M., Lu, W., Margutti, R., Martin, C. D., Masters, D. C., McKernan, B., Nissanke, S. M., Parazin, B., Perley, D. A., Phinney, E. S., Piro, A. L., Raaijmakers, G., Rodriguez, A. C., Senchyna, P., Singer, L. P., Spake, J. J., Stassun, K. G., Stern, D., Teplitz, H. I., Weisz, D. R., Yao, Y. 2021, “Science with the Ultraviolet Explorer (UVEX)”, arXiv: 2111.15608, PASP, submitted.

62. **El-Badry, K.** and Burdge, K., 2021, “NGC 1850 BH1 is another stripped-star binary masquerading as a black hole”, arXiv: 2111.07925, MNRASL, 511, 24.
61. Nagarajan, P., Weisz, D., **El-Badry, K.**, 2021, “RR Lyrae-based Distances for 39 Nearby Dwarf Galaxies Calibrated to Gaia eDR3”, arXiv:2111.06899, ApJ, 932, 19.
60. Hwang, H.-C., Ting, Y.-S., Conroy, C., Zakamska, N., **El-Badry, K.**, Cargile, P., Zaritsky, D., Chandra, V., Han, J. J., Speagle, J. S., Bonaca, A., 2021, “Wide binaries from the H3 survey: the thick disk and halo have similar wide binary fractions”, arXiv:2111.01788, MNRAS, 513, 754.
59. Patel, P., Loebman, S., Wetzel, A., Faucher-Giguère, C.-A., **El-Badry, K.**, Bailin, J., 2021, “Predictions for complex distributions of stellar elemental abundances in low-mass galaxies”, arXiv:2110.08287, MNRAS, 512, 5671.
58. Kado-Fong, E., Sanderson, R. E., Greene, J. E., Cunningham, C. C., Wheeler, C., Chan, T. K., **El-Badry, K.**, Hopkins, P. F., Wetzel, A., Boylan-Kolchin, M., Faucher-Giguère, C.-A., Huang, S., Quataert, E., Starkenburg, T., 2021, “The in-situ origins of dwarf stellar outskirts in FIRE-2”, arXiv:2109.05034, ApJ, 931, 152.
57. Rybizki, J., Green, G. M., Rix, H.-W., **El-Badry, K.**, Demleitner, M., Zari, E., Udalski, A., Smart, R., Gould, A., 2021, “A classifier for spurious astrometric solutions in Gaia eDR3”, arXiv:2101.11641, MNRAS, 510, 2597.
56. Emami, N., Siana, B., **El-Badry, K.**, Cook, D., Ma, X., Weisz, D., Gharibshah, J., Alaei, S., Scarlata, C., Skillman, E., 2021, “Testing the relationship between bursty star formation and size fluctuations of local dwarf galaxies”, arXiv:2108.08857, ApJ, 922, 217.
55. **El-Badry, K.**, Rix, H.-W., Quataert, E., Kupfer, T., Shen, K., 2021, “Birth of the ELMs: a ZTF survey for evolved cataclysmic variables turning into extremely low-mass white dwarfs”, arXiv:2108.04255, MNRAS, 508, 4106.
54. Moss, A., von Hippel, T., Robinson, E., **El-Badry, K.**, Stenning, D., van Dyk, D., Fouesneau, M., Bailer-Jones, C., Jeffery, E., Sargent, J., Kloc, I., Motiecka, N., 2021, “Ages of wide white dwarf - main sequence binaries with Gaia parallaxes and spectroscopic metallicities”, arXiv:2203.08971, ApJ, 929, 26.
53. Jahn, E. D., Sales, L. V., Wetzel, A., Samuel, J., **El-Badry, K.**, Boylan-Kolchin, M., Bullock, J. S., 2021, “The effects of LMC-mass environments on their dwarf satellite galaxies in the FIRE simulations”, arXiv:2106.03861, MNRAS, 513, 2673.
52. Terreran, G., Jacobson-Galan, W. V., Groh, J. H., Margutti, R., Coppejans, D. L., Dimitriadis, G., Kilpatrick, C. D., Matthews, D. J., Siebert, M. R., Angus, C. R., Brink, T. G., Filippenko, A. V., Foley, R. J., Jones, D. O., Tinianont, S., Gall, C., Pfister, H., Zenati, Y., Ansari, Z., Auchettl, K., **El-Badry, K.**, Magnier, E. A., Zheng, W., 2021, “The early phases of Supernova 2020pni: shock-ionization of the nitrogen-enriched circumstellar material”, arXiv:2105.12296, ApJ, 926, 20.
51. Nelson, T., Ting, Y.-S., Hawkins, K., Ji, A., Kamdar, H., **El-Badry, K.**, 2021, “Distant relatives: The chemical homogeneity of comoving pairs identified in Gaia”, arXiv:2104.12883, ApJ, 921, 118.
50. **El-Badry, K.**, Quataert, E., Rix, H.-W., Weisz, D. R., Kupfer, T., Shen, K., Xiang M., Yang Y., Liu, X., 2021, “LAMOST J0140355+392651: An evolved cataclysmic variable donor transitioning to become an extremely low mass white dwarf”, arXiv:2104.07033, MNRAS, 505, 2051.
49. Stern, J., Sternberg, A., Faucher-Giguère, C.-A., Hafen, Z., Fielding, D., Quataert, E., Wetzel, A., Anglès-Alcàzar, D., **El-Badry, K.**, Kereš, D., Hopkins, P. F., 2021, “Neutral CGM as damped Ly absorbers at high redshift”, arXiv:2105.06489, MNRAS, 507, 2869.
48. Santistevan, I., Wetzel, A., Sanderson, R., **El-Badry, K.**, Samuel, J., Faucher-Giguère, C.-A., 2021, “The origin of metal-poor stars on prograde disk orbits in FIRE simulations of Milky Way-mass galaxies”, arXiv:2102.03369, MNRAS, 505, 921.
47. **El-Badry, K.**, Rix, H.-W., Heintz, T. M., 2021, “A million binaries from Gaia eDR3: sample selection and validation of Gaia parallax uncertainties”, arXiv:2101.05282, MNRAS, 506, 2269.
46. Martin, D. V., **El-Badry, K.**, Hodžić, V. K., Triaud, A. H. M. J., Angus, R., Birky, J., Foreman-Mackey, D., Hedges, C., Montet, B., Murphy, S. J., Santerne, A., Stassun, K. G., Stephan A. P., Wang, J., Benni, P., Krushinsky, V., Chazov, N., Mishevskiy, N., Ziegler, C., Soubkiou, A., Benkhaldoun, Z., Caldwell, D. A., Collins, K., Henze, C. E., Guerrero, N. M., Jenkins, J. M., Latham D. W., Levine, A., McDermott, S., Mullally, S. E., Ricker, G., Seager, S., Shporer, A., Vanderburg, A., Vanderspek, R., Winn, J. N., 2021, “TOI-1259Ab

- a gas giant with 2.6% deep transits and a bound white dwarf companion”, arXiv:2101.02707, MNRAS, 507, 4132.
45. Mercado, F. J., Bullock, J. S., Boylan-Kolchin, M., Moreno, J., Wetzel, A., **El-Badry, K.**, Graus, A. S., Fitts, A., Hopkins, P. F., Faucher-Giguère, C.-A., 2020, “Totally metal: A relationship between stellar metallicity gradients and galaxy age in dwarf galaxies”, arXiv:2009.01241, MNRAS, 501, 5121.
 44. Velázquez, J. F., Gurvich, A. B., Faucher-Giguère, C.-A., Bullock, J. S., Starkenburg, T. K., Moreno, J., Lazar, A., Mercado, F. J., Stern, J., Sparre, M., Hayward, C., Wetzel, A., **El-Badry, K.**, 2020 “The time-scales probed by star formation rate indicators for realistic, bursty star formation histories from the FIRE simulations”, arXiv:2008.08582, MNRAS, 501, 4812.
 43. Xiang, M.-S., Rix, H.-W., Ting, Y.-S., Zari, E., **El-Badry, K.**, Yuan, H.-B., Cui, W.-Y., 2020, “Data-driven spectroscopic estimates of absolute magnitude, distance, and binarity — method and catalog of 16,002 O- and B-type stars from LAMOST”, arXiv:2008.10637, ApJS, 253, 22.
 42. Irrgang, A., Geier, S., Heber, U., Kupfer, T., **El-Badry, K.**, Bloemen, S., 2020, “A proto-helium white dwarf stripped by a substellar companion via common-envelope ejection: Uncovering the true nature of a candidate hypervelocity B-star”, arXiv:2007.03350, A&A., 650, 102.
 41. Kamdar, H., Conroy, C., Ting, Y.-S., **El-Badry, K.**, 2020, “Spatial and kinematic clustering of stars in the Galactic disk”, arXiv:2007.10990, ApJ, submitted.
 40. Stern, J., Faucher-Giguère, C.-A., Fielding, D., Quataert, E., Hafen, Z., Gurvich, A. B., Ma, X., Byrne, L., **El-Badry, K.**, Anglès-Alcàzar, D., Chan, T.-K., Feldmann, R., Kereš, D., Wetzel, A., Murray, N., Hopkins, P. F., 2020, “Virialization of the inner CGM in the FIRE simulations and implications for galaxy discs, star formation and feedback”, arXiv: 2006.13976, ApJ, 911, 88.
 39. **El-Badry, K.** and Quataert, E., 2020, “A stripped-companion origin for Be stars: clues from the putative black holes HR 6819 and LB-1”, arXiv:2006.11974, MNRAS, 502, 3436.
 38. Li, F., Rahman, M., Murray, N., Hafen, Z., Faucher-Giguère, C.-A., Stern, J., Hummels, C. B., Hopkins, P. F., **El-Badry, K.**, Kereš, D., 2020, “Probing the CGM of low-redshift dwarf galaxies using FIRE simulations”, arXiv:2010.13606, MNRAS, 500, 1038.
 37. Lazar, A., Bullock, J. S., Boylan-Kolchin, M., Chan, T.-K., Hopkins, P. F., Graus, A., Wetzel, A., **El-Badry, K.**, Wheeler, C., Straight, M. C., Kereš, D., Faucher-Giguère, C.-A., Fitts, A., Garrison-Kimmel, S., 2020, “A dark matter profile to model diverse feedback-induced core sizes of Λ CDM haloes”, arXiv:2004.10817, MNRAS, 497, 2393.
 36. Coronado, J., Rix, H.-W., Trick, W., **El-Badry, K.**, Rybizki, J., Xiang, M., 2020, “From birth associations to field stars: mapping the small-scale orbit distribution in the Galactic disc”, arXiv:2002.09496, MNRAS, 495, 4098.
 35. Santistevan, I. B., Wetzel, A., **El-Badry, K.**, Bland-Hawthorn, J., Boylan-Kolchin, M., Bailin, J., Faucher-Giguère, C.-A., Benincasa, S., 2020, “Growing pains: the formation times and building blocks of Milky Way-mass galaxies in the FIRE simulations”, arXiv:2001.03178, MNRAS, 497, 747.
 34. Pelliccia, D., Mobasher, B., Darvish, B., Lemaux, B. C., Lubin, L. M., Hirtenstein, J., Shen, L., Wu, P.-F., **El-Badry, K.**, Wetzel, A., Jones, T., 2020, “Effects of stellar feedback on stellar and gas kinematics of star-forming galaxies at $0.6 < z < 1.0$ ”, arXiv:2001.00590, ApJL, 896, 26.
 33. **El-Badry, K.** and Quataert, E., 2019, “Not so fast: LB-1 is unlikely to contain a $70 M_{\odot}$ black hole”, arXiv:1912.04185, MNRASL, 493, 22.
 32. Hafen, Z., Faucher-Giguère, C.-A., Anglès-Alcàzar, D., Stern, J., Kereš, D., Esmerian, C., Wetzel, A., **El-Badry, K.**, Chan, T.-K., Murray, N., 2019, “The fates of the circumgalactic medium in the FIRE simulations”, arXiv:1910.01123, MNRAS, 494, 3581.
 31. Tian, H.-J., **El-Badry, K.**, Rix, H.-W., Gould, A., 2019, “The separation distribution of ultrawide binaries across galactic populations”, arXiv:1909.04765, ApJS, 246, 4.
 30. Hawkins, K., Lucey, M., Ting, Y.-S., Ji, A., Katzberg, D., Thompson, M., **El-Badry, K.**, Teske, J., Nelson, T., Carrillo, A., 2019, “Identical or fraternal twins?: The chemical homogeneity of wide binaries from *Gaia* DR2”, arXiv:1912.08895, MNRAS, 492, 1164.

29. **El-Badry, K.**, Rix, H.-W., Tian, H., Duchêne, G., Moe, M., 2019, “Discovery of an equal-mass “twin” binary population reaching 1000+ AU separations”, arXiv:1906.10128, MNRAS, 489, 5822.
28. Jahn, E. D., Sales, L. V., Wetzel, A., Boylan-Kolchin, M., Chan, T.K., **El-Badry, K.**, Lazar, A., Bullock, J. S., 2019, “Dark and luminous satellites of LMC-mass galaxies in the FIRE simulations”, MNRAS, 489, 5348.
27. Samuel, J., Wetzel, A., Tollerud, E., Garrison-Kimmel, S., Loebman, S., **El-Badry, K.**, Hopkins, P.F., Boylan-Kolchin, M., Faucher-Giguère, C.-A., Bullock, J., Benincasa, S., Bailin, J., 2019, “A profile in FIRE: resolving the radial distributions of satellite galaxies in the Local Group with simulations”, arXiv:1904.11508, MNRAS, 491, 1471
26. Garrison-Kimmel, S., Wetzel, A., Hopkins, P. F., Sanderson, R., **El-Badry, K.**, Graus, A., Chan, T.K., Feldmann, R., Boylan-Kolchin, M., Hayward, C., Bullock, J. S., Fitts, A., Samuel, J., Wheeler, C., Kereš, D., Faucher-Giguère, C.-A., 2019, “Star formation histories of dwarf galaxies in the FIRE simulations: dependence on mass and Local Group environment”, arXiv:1903.10515, MNRAS, 489, 4574.
25. **El-Badry, K.**, Ostriker, E. O., Kim, C.-G., Quataert, E., Weisz, D. R., 2019, “Evolution of supernovae-driven superbubbles with conduction and cooling”, arXiv:1902.09547, MNRAS, 490, 1961.
24. Dickey, C. M., Geha, M., Wetzel, A., **El-Badry, K.**, 2019, “AGN all the way down? AGN-like line ratios are common in the lowest-mass isolated quiescent galaxies”, arXiv:1902.01401, ApJ, 884, 180.
23. Emami, N., Siana, B., Weisz D. R., Johnson, B. D., Ma, X., **El-Badry, K.**, 2018, “A closer look at bursty star formation with $L_{H\alpha}$ and L_{UV} distributions”, arXiv:1809.06380, ApJ, 881, 71.
22. Fitts, A., Boylan-Kolchin, M., Bozek, B., Bullock, J. S., Graus, A., Robles, V., Hopkins P. F., **El-Badry, K.**, Garrison-Kimmel, S., Faucher-Giguère, C.-A., Wetzel, A., Kereš, D., 2018, “Dwarf galaxies in CDM, WDM, and SIDM: disentangling baryons and dark matter physics”, arXiv: 1811.11791, MNRAS, 490, 962.
21. Hafen, Z., Faucher-Giguère, C.-A., Anglès-Alcàzar, D., Stern, J., Kereš, D., Hummels, C., Esmerian, C., Garrison-Kimmel, S., **El-Badry, K.**, Wetzel, A., Chan, T. K., Hopkins, P. F., Murray, N., 2018, “The origins of the circumgalactic medium in the FIRE simulations”, arXiv:1811.11753, MNRAS, 488, 1.
20. Hirtenstein, J., Jones T., Wang, X., Wetzel, A., **El-Badry, K.**, Hoag, A., Treu, T., Bradač, M., Morishita, T., 2018, “The OSIRIS lens-amplified survey (OLAS) I: dynamical effects of stellar feedback in low mass galaxies at $z \sim 2$ ”, arXiv:1811.11768, ApJ, 880, 54.
19. **El-Badry, K.**, 2019, “The geometric challenge of testing gravity with wide binaries”, arXiv:1810.13397, MNRAS, 482, 5018.
18. **El-Badry, K.** and Rix, H.-W., 2019, “The wide binary fraction of solar-type stars: emergence of metallicity dependence at $a < 200$ AU”, arXiv:1809.06860, MNRAS, 482, 139.
17. **El-Badry, K.** and Rix, H.-W., 2018, “Imprints of white dwarf recoil in the separation distribution of Gaia wide binaries”, arXiv:1807.06011, MNRAS, 480, 4884.
16. Garrison-Kimmel, S., Hopkins, P. F., Wetzel, A., Bullock, J., Boylan-Kolchin, M., Kereš, D., Faucher-Giguère, C.-A., **El-Badry, K.**, Lamberts, A., Quataert, E., Sanderson R. E., 2018, “The Local Group on FIRE: Dwarf galaxy populations across a suite of hydrodynamic simulations”, arXiv:1806.04143, MNRAS, 487, 1380.
15. Debattista, V. P., Gonzalez O. A., Sanderson R. E., **El-Badry, K.**, Garrison-Kimmel, S., Wetzel, A., Faucher-Giguère, C.-A., Hopkins, P. F., 2018, “Formation, vertex deviation and age of the Milky Way’s bulge: input from a cosmological simulation with a late-forming bar”, arXiv:1805.12199, MNRAS, 485, 5073.
14. **El-Badry, K.**, Rix, H.-W., Weisz, D. R. 2018, “An empirical measurement of the initial-final mass relation with Gaia white dwarfs”, arXiv:1805.05849, ApJL, 860, 17.
13. **El-Badry, K.**, Quataert, E., Weisz, D. R., Choksi, N., Boylan-Kolchin, M. 2019, “The formation and hierarchical assembly of globular cluster populations”, arXiv:1805.03652, MNRAS, 482, 4528.
12. **El-Badry, K.**, Bland-Hawthorn, J., Wetzel, A., Quataert, E., Weisz, D. R., Boylan-Kolchin, M., Hopkins, P. F., Faucher-Giguère, C.-A., Kereš, D., Garrison-Kimmel, S. 2018, “Where are the most ancient stars in the Milky Way?”, arXiv:1804.00659, MNRAS, 480, 652.
11. Fitts, A., Boylan-Kolchin, M., Bullock, J., Weisz, D. R., **El-Badry, K.**, Wheeler, C., Faucher-Giguère, C.-A., Quataert, E., Hopkins, P. F., Kereš, D., Wetzel, A., 2018, “No assembly required: mergers are mostly irrelevant for the growth of low-mass dwarf galaxies”, arXiv:1801.06187, MNRAS, 479, 319.

10. **El-Badry, K.**, Bradford, J., Quataert, E., Geha, M., Boylan-Kolchin, M., Weisz, D. R., Wetzel, A., Hopkins, P. F., Chan, T. K., Fitts, A., Kereš, D., Faucher-Giguère, C.-A. 2018, “Gas kinematics in FIRE simulated galaxies compared to spatially unresolved HI observations”, arXiv:1801.03933, MNRAS, 477, 1536.
9. Garrison-Kimmel, S., Hopkins, P. F., Wetzel, A., **El-Badry, K.**, Sanderson R. E., Bullock, J., Ma, X., van de Voort, F., Hafen, Z., Faucher-Giguère, C.-A., Hayward, C. C., Quataert, E., Kereš, D., Boylan-Kolchin, M., 2018, “The origin of the diverse morphologies and kinematics of Milky Way-mass galaxies in the FIRE-2 simulations”, arXiv:1712.03966, MNRAS, 481, 4133.
8. Chan, T. K., Kereš, D., Wetzel, A., Hopkins, P. F., Faucher-Giguère, C.-A., **El-Badry, K.**, Garrison-Kimmel, S., Boylan-Kolchin, M. 2017, “The origin of ultra diffuse galaxies: stellar feedback and quenching”, arXiv:1711.04788, MNRAS, 478, 906.
7. **El-Badry, K.**, Ting, Y.-S., Rix, H.-W., Quataert, E., Weisz, D. R., Cargile, P., Conroy, C., Hogg, D. W., Bergemann, M., Liu, C., 2018, “Discovery and characterization of 3000+ main-sequence binaries from APOGEE spectra”, arXiv:1711.08793, MNRAS, 476, 528.
6. **El-Badry, K.**, Rix, H.-W., Ting, Y.-S., Weisz, D. R., Bergemann, M., Cargile, P., Conroy, C., Eilers, A.-C. 2018, “Signatures of unresolved binaries in stellar spectra: implications for spectral fitting”, arXiv:1709.03983, MNRAS, 473, 5043.
5. Hopkins, P. F., Wetzel, A., Kereš, D., Faucher-Giguère, C.-A., Quataert, E., Boylan-Kolchin, M., Murray, N; Hayward, C. C., **El-Badry, K.** 2017, “How to model supernovae in simulations of star and galaxy formation”, arXiv:1707.07010, MNRAS, 477, 1578.
4. **El-Badry, K.**, Quataert, E., Wetzel, A., Hopkins, P. F., Weisz, D. R., Chan, T. K., Fitts, A., Boylan-Kolchin, M., Kereš, D., Faucher-Giguère, C.-A., Garrison-Kimmel, S. 2018, “Gas kinematics, morphology, and angular momentum in the FIRE simulations”, arXiv:1705.10321, MNRAS, 473, 1930.
3. **El-Badry, K.**, Weisz, D. R., Quataert, E. 2017, “The statistical challenge of constraining the low-mass IMF in Local Group dwarf galaxies”, arXiv:1701.02347, MNRAS, 468, 319.
2. **El-Badry, K.**, Wetzel, A., Geha, M., Quataert, E., Hopkins, P. F., Kereš, D., Chan, T. K., Faucher-Giguère, C.-A. 2017, “When the Jeans do not fit: How stellar feedback drives stellar kinematics and complicates dynamical modeling in low-mass galaxies”, arXiv:1610.04232, ApJ, 835, 193.
1. **El-Badry, K.**, Wetzel, A., Geha, M., Hopkins, P. F., Kereš, D., Chan, T. K., Faucher-Giguère, C.-A. 2016, “Breathing FIRE: How stellar feedback drives radial migration, rapid size fluctuations, and population gradients in low-mass galaxies”, arXiv:1512.01235, ApJ, 820, 131.

UNREFEREED PUBLICATIONS

2. **El-Badry, K.**, 2022, “The gravitational redshift of solar-type stars from Gaia DR3 wide binaries”, arXiv:2206.11092, RNAAS, 6, 137.
1. ET Consortium, including **El-Badry, K.**, 2022, “ET white paper: to find the first Earth 2.0”, arXiv:2206.06693