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Publications – [ORCID]

In Progress

1. **D. M. Miles**, R. L. McEntaffer, J. H. Tutt, *et al.*, "The first flight of the Rockets for Extended-source X-ray Spectroscopy," 2024.
2. **D. M. Miles**, V. Picouet, D. C. Martin, D. Schiminovich, E. Hamden, and K. Hoadley, "The Faint Intergalactic-medium Redshifted Emission Balloon 2023 Flight," 2024.
3. **D. M. Miles**, R. L. McEntaffer, J. H. Tutt, *et al.*, "Design of the Rockets for Extended-source X-ray Spectroscopy," 2024.

Journal Articles - 19; 2 first author, 8 with significant contribution

1. T. Brendel, A. Khan, S. Agarwal, *et al.*, "Balloon-borne FIREBall-2 ultraviolet spectrograph stray light control based on nonsequential reverse modeling of on-sky data," *Journal of Astronomical Telescopes, Instruments, and Systems*, vol. 8, 048001, p. 048 001, Oct. 2022. DOI: 10.1117/1.JATIS.8.4.048001.
2. K. France, B. Fleming, A. Youngblood, *et al.*, "Extreme-ultraviolet Stellar Characterization for Atmospheric Physics and Evolution mission: motivation and overview," *Journal of Astronomical Telescopes, Instruments, and Systems*, vol. 8, 014006, p. 014 006, Jan. 2022. DOI: 10.1117/1.JATIS.8.1.014006. arXiv: 2201.13219 [astro-ph.IM].
3. N. Kruczek, **D. M. Miles**, B. Fleming, *et al.*, "High efficiency echelle gratings for the far ultraviolet," *Applied Optics*, vol. 61, no. 22, p. 6430, Aug. 2022. DOI: 10.1364/AO.461537. arXiv: 2207.07659 [astro-ph.IM].
4. M. Urban, O. Nentvich, T. Báča, *et al.*, "REX: X-ray experiment on the water recovery rocket," *Acta Astronautica*, vol. 184, pp. 1–10, Jul. 2021. DOI: 10.1016/j.actaastro.2021.03.019. arXiv: 2011.10072 [astro-ph.IM].
5. D. M. LaRocca, P. Kaaret, D. L. Kirchner, *et al.*, "Design and construction of the x-ray instrumentation onboard the HaloSat CubeSat," *Journal of Astronomical Telescopes, Instruments, and Systems*, vol. 6, 014003, p. 014 003, Jan. 2020. DOI: 10.1117/1.JATIS.6.1.014003.
6. J. A. McCoy, R. L. McEntaffer, and **D. M. Miles**, "Extreme Ultraviolet and Soft X-Ray Diffraction Efficiency of a Blazed Reflection Grating Fabricated by Thermally Activated Selective Topography Equilibration," *The Astrophysical Journal*, vol. 891, no. 2, 114, p. 114, Mar. 2020. DOI: 10.3847/1538-4357/ab76d3. arXiv: 2003.06449 [astro-ph.IM].
7. J. A. McCoy, M. A. Verschuuren, **D. M. Miles**, and R. L. McEntaffer, "X-ray verification of sol-gel resist shrinkage in substrate-conformal imprint lithography for a replicated blazed reflection grating," *OSA Continuum*, 3(11), pp. 3141–3156, Oct. 2020. DOI: 10.48550/arXiv.2011.14771.
8. R. C. McCurdy, **D. M. Miles**, J. A. McCoy, F. Grisé, and R. L. McEntaffer, "Diffraction efficiency of a small-period astronomical x-ray reflection grating fabricated using thermally activated selective topography equilibration," *Journal of Astronomical Telescopes, Instruments, and Systems*, vol. 6, 045003, p. 045 003, Oct. 2020. DOI: 10.1117/1.JATIS.6.4.045003.
9. T. Rogers, R. McEntaffer, J. McCoy, **D. M. Miles**, T. Schultz, and J. Tutt, "Induced X-ray fluorescence background for high-voltage space based detectors," *Experimental Astronomy*, vol. 49, no. 1-2, pp. 1–20, Jan. 2020. DOI: 10.1007/s10686-019-09649-5.

10. P. Kaaret, A. Zajczyk, D. M. LaRocca, *et al.*, "HaloSat: A CubeSat to Study the Hot Galactic Halo," *The Astrophysical Journal*, vol. 884, no. 2, 162, p. 162, Oct. 2019. DOI: 10.3847/1538-4357/ab4193. arXiv: 1909.13822 [astro-ph.IM].

11. **D. M. Miles**, S. V. Hull, T. B. Schultz, *et al.*, "Water Recovery X-Ray Rocket grating spectrometer," *Journal of Astronomical Telescopes, Instruments, and Systems*, vol. 5, 044006, p. 044 006, Oct. 2019. DOI: 10.1117/1.JATIS.5.4.044006.

12. J. H. Tutt, R. L. McEntaffer, **D. M. Miles**, B. D. Donovan, and C. Hillman, "Grating Alignment for the Water Recovery X-Ray Rocket (WRXR)," *Journal of Astronomical Instrumentation*, vol. 8, no. 3, 1950009, p. 1 950 009, Jan. 2019. DOI: 10.1142/S2251171719500090.

13. **D. M. Miles**, J. A. McCoy, R. L. McEntaffer, *et al.*, "Fabrication and Diffraction Efficiency of a Large-format, Replicated X-Ray Reflection Grating," *The Astrophysical Journal*, vol. 869, no. 2, 95, p. 95, Dec. 2018. DOI: 10.3847/1538-4357/aaec73.

14. T. Rogers, R. McEntaffer, T. Schultz, J. McCoy, **D. Miles**, and J. Tutt, "Gaseous electron multiplier gain characteristics using low-pressure Ar/CO_2," *Experimental Astronomy*, vol. 43, no. 2, pp. 201–210, Apr. 2017. DOI: 10.1007/s10686-017-9531-8.

15. C. T. DeRoo, R. L. McEntaffer, **D. M. Miles**, *et al.*, "Line spread functions of blazed off-plane gratings operated in the Littrow mounting," *Journal of Astronomical Telescopes, Instruments, and Systems*, vol. 2, 025001, p. 025 001, Apr. 2016. DOI: 10.1117/1.JATIS.2.2.025001. arXiv: 1603.04839 [astro-ph.IM].

16. H. Marlowe, R. L. McEntaffer, J. H. Tutt, *et al.*, "Modeling and empirical characterization of the polarization response of off-plane reflection gratings," *Applied Optics*, vol. 55, no. 21, p. 5548, Jul. 2016. DOI: 10.1364/AO.55.005548.

17. J. McCoy, T. Schultz, J. Tutt, T. Rogers, **D. Miles**, and R. McEntaffer, "A Primer for Telemetry Interfacing in Accordance with NASA Standards Using Low Cost FPGAs," *Journal of Astronomical Instrumentation*, vol. 5, no. 1, 1640002, p. 1 640 002, Dec. 2016. DOI: 10.1142/S225117171640002X. arXiv: 2203.11913 [astro-ph.IM].

18. J. H. Tutt, R. L. McEntaffer, H. Marlowe, *et al.*, "Diffraction Efficiency Testing of Sinusoidal and Blazed Off-Plane Reflection Gratings," *Journal of Astronomical Instrumentation*, vol. 5, no. 3, 1650009, p. 1 650 009, Sep. 2016. DOI: 10.1142/S2251171716500094.

19. H. Marlowe, R. L. McEntaffer, R. Allured, *et al.*, "Performance testing of an off-plane reflection grating and silicon pore optic spectrograph at PANTER," *Journal of Astronomical Telescopes, Instruments, and Systems*, vol. 1, 045004, p. 045 004, Oct. 2015. DOI: 10.1117/1.JATIS.1.4.045004. arXiv: 1503.05809 [astro-ph.IM].

Conference Proceedings - 24; 6 first author, 7 with significant contribution

1. **D. M. Miles**, R. L. McEntaffer, and F. Grisé, "Blazed reflection gratings with electron-beam lithography and ion-beam etching," in *Space Telescopes and Instrumentation 2022: Ultraviolet to Gamma Ray*, J.-W. A. den Herder, S. Nikzad, and K. Nakazawa, Eds., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 12181, Aug. 2022, 1218153, p. 1 218 153. DOI: 10.1117/12.2637880.

2. V. Picouet, D. Valls-Gabaud, B. Milliard, *et al.*, "FIREBall-2: flight preparation of a proven balloon payload to image the intermediate redshift circumgalactic medium," Nov. 2022, 25th ESA PAC Symposium. DOI: 10.48550/arXiv.2211.15491. arXiv: 2211.15491 [astro-ph.IM].

3. B. T. Fleming, K. France, T. Hellickson, *et al.*, "Opto-mechanical design of the ESCAPE Small Explorer: an EUV spectrograph for exoplanet host star irradiance and CME activity," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXII*, O. H. Siegmund, Ed., ser. Society of

Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11821, Aug. 2021, 1182104, p. 1 182 104. DOI: 10.1117/12.2593732.

4 K. France, B. Fleming, A. Youngblood, *et al.*, "The ESCAPE mission overview: exploring the stellar drivers of exoplanet habitability," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXII*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11821, Aug. 2021, 1182103, p. 1 182 103. DOI: 10.1117/12.2593814.

5 F. Grisé, N. Kruczek, B. Fleming, *et al.*, "Fabrication of custom astronomical gratings for the extreme and far ultraviolet bandpasses," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXII*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11821, Aug. 2021, 1182112, p. 1 182 112. DOI: 10.1117/12.2594796.

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7 **D. M. Miles**, J. H. Tutt, R. McCurdy, *et al.*, "An update on the rockets for extended-source X-ray spectroscopy," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXII*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11821, Aug. 2021, 118210K, 118210K. DOI: 10.1117/12.2594291.

8 J. H. Tutt, **D. M. Miles**, R. McEntaffer, *et al.*, "Developments of the focal plane camera for tREXS," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXII*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11821, Aug. 2021, 118210V, p. 118210V. DOI: 10.1117/12.2594563.

9 K. France, B. Fleming, A. Youngblood, *et al.*, "EUV spectroscopy with the ESCAPE mission: exploring the stellar drivers of exoplanet habitability," in *Space Telescopes and Instrumentation 2020: Ultraviolet to Gamma Ray*, J.-W. A. den Herder, S. Nikzad, and K. Nakazawa, Eds., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11444, Dec. 2020, 1144405, p. 1 144 405. DOI: 10.1117/12.2560292.

10 K. France, B. T. Fleming, J. J. Drake, *et al.*, "The extreme-ultraviolet stellar characterization for atmospheric physics and evolution (ESCAPE) mission concept," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXI*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11118, Sep. 2019, 1111808, p. 1 111 808. DOI: 10.1117/12.2526859.

11 P. Kaaret, A. Zajczyk, and e. a. LaRocca Daniel, "First Results from HaloSat - A CubeSat to Study the Hot Galactic Halo," in *Proc. of AIAA/USU*, ser. Conference on Small Satellites, Upcoming Missions, Year in Review I, vol. SSC19-III-05, 2019. URL: https://digitalcommons.usu.edu/smallsat/2019/all2019/277/.

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13 **D. M. Miles**, R. M. McEntaffer, J. H. Tutt, *et al.*, "An introduction to the Rockets for Extended-source X-ray Spectroscopy," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXI*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11118, Sep. 2019, 111180B, 111180B. DOI: 10.1117/12.2529567.

14 J. H. Tutt, **D. M. Miles**, R. M. McEntaffer, T. Anderson, M. Weiss, and B. C. O'Meara, "The focal plane camera for tREXS," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXI*,

O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11118, Sep. 2019, 111180C, p. 111180C. DOI: 10.1117/12.2529555.

15 M. Wages, S. V. Hull, A. D. Falcone, *et al.*, "Flight camera package design, calibration, and performance for the Water Recovery X-ray Rocket mission," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXI*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 11118, Sep. 2019, 111180D, p. 111180D. DOI: 10.1117/12.2529361.

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17 **D. M. Miles**, R. L. McEntaffer, T. B. Schultz, *et al.*, "An introduction to the water recovery x-ray rocket," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 10397, Aug. 2017, 103970R, 103970R. DOI: 10.1117/12.2274249.

18 J. E. Hill, J. K. Black, K. Jahoda, *et al.*, "The x-ray polarimeter instrument on board the Polarimeter for Relativistic Astrophysical X-ray Sources (PRAXyS) mission," in *Space Telescopes and Instrumentation 2016: Ultraviolet to Gamma Ray*, J.-W. A. den Herder, T. Takahashi, and M. Bautz, Eds., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9905, Jul. 2016, 99051B, 99051B. DOI: 10.1117/12.2233322.

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21 **D. M. Miles**, J. H. Tutt, C. T. DeRoo, *et al.*, "Diffraction efficiency of radially-profiled off-plane reflection gratings," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9603, Sep. 2015, 960316, p. 960 316. DOI: 10.1117/12.2186842.

22 T. J. Peterson, C. T. DeRoo, H. Marlowe, *et al.*, "Off-plane x-ray reflection grating fabrication," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9603, Sep. 2015, 960317, p. 960 317. DOI: 10.1117/12.2188302.

23 T. Rogers, T. Schultz, J. McCoy, **D. Miles**, J. Tutt, and R. McEntaffer, "First results from the OGRESS sounding rocket payload," in *UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XIX*, O. H. Siegmund, Ed., ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9601, Sep. 2015, 960104, p. 960 104. DOI: 10.1117/12.2183237.

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