

## Tim B. Miller

---

Department of Astronomy  
Yale University, 52 Hillhouse ave  
New Haven, CT, 06511

---

tim.miller@yale.edu  
tbmiller-astro.github.io

**Research Interests** Galaxy formation and evolution; Galaxy morphology; Image analysis techniques; Bayesian Modeling; Machine learning techniques; Low surface-brightness observations; Galaxy surveys;

**Education** *Ph.D Candidate, Astronomy* Expected Summer 2023  
Yale University, CT, USA  
Supervisor: Pieter van Dokkum

*Masters of Science, Physics* Awarded August 2017  
Dalhousie University, Nova Scotia, Canada  
Supervisor: Scott Chapman  
Thesis: *Star Formation Rate Indicators in the FIRE Simulations & SPT2349-56: A Massive and Active Proto-cluster*

*Bachelor of Science, First Class Honors in Physics* Awarded May 2015  
Dalhousie University, Nova Scotia, Canada

**Academic Scholarships & Awards** Gruber Science Fellowship 2017 - Present  
Killam Predoctoral Scholarship-Master's 2016 - 2017  
Nova Scotia Graduate Scholarship 2016 - 2017  
NSERC Canada Graduate Scholarship-Master's 2016  
NSERC Undergraduate Summer Research Award Summers 2013 - 2015  
Mackenzie Scholarship 2013

### Publications

**First Authored** **Miller, T. B.**, van Dokkum, P., & Mowla, L. 2022, "Color gradients and half-mass radii of galaxies out to  $z = 2$  in the CANDELS/3D-HST fields: further evidence for important differences in the evolution of mass-weighted and light-weighted sizes" , in Review, ApJ, arXiv:2207.05895

**Miller, T. B.** & van Dokkum, P., 2021, "Bayesian fitting of multi-Gaussian expansion models to galaxy images", ApJ, 923, 1, 124

**Miller, T. B.**, van Dokkum, P., Danieli, S., et al. 2021, "The Dragonfly Wide Field Survey. II. Accurate Total Luminosities and Colors of Nearby Massive Galaxies and Implications for the Galaxy Stellar Mass Function", ApJ, 909, 74

**Miller, T. B.**, van den Bosch, F. C., Green, S. B., et al. 2020, "Dynamical self-friction: how mass loss slows you down ", MNRAS , 495, 4496.

**Miller, T. B.**, Chapman, S. C., Hayward, C. C., et al., 2020, "Investigating overdensities around  $z > 6$  Galaxies through ALMA observations of [CII]", ApJ , 889,

**Miller, T. B.**, van Dokkum, P., Mowla, L. and van der Wel, A. 2019, “A New View of the Size-Mass Distribution of Galaxies: Using  $r_{20}$  and  $r_{80}$  Instead of  $r_{50}$ ”, *ApJL*, 872, L14

**Miller, T. B.**, Chapman, S. C., Aravena, M., et al., 2018, “A massive core for a cluster of galaxies at a redshift of 4.3” , *Nature*, 556, 469

**Miller, T. B.**, Hayward, C. C., Chapman, S. C., et al. 2015, “The bias of the sub-millimetre galaxy population: SMGs are poor tracers of the most-massive structures in the  $z \sim 2$  Universe”, *MNRAS*, 452, 878

#### Co-authored

Suess, K. A., Bezanson, R.,... **Miller, T. B.** ..., et al. 2022, ”Rest-frame near-infrared sizes of galaxies at cosmic noon: objects in JWST’s mirror are smaller than they appeared ”, Submitted to *ApJL* arXiv:2207.10655

Lokhorst, D., Abraham, R.,... **Miller, T. B.** ..., et al. 2022, ”A Giant Shell of Ionized Gas Discovered near M82 with the Dragonfly Spectral Line Mapper Pathfinder”, *ApJ*, 927, 136.

Pasha, I., Lokhorst, D.,... **Miller, T. B.** ..., et al. 2021, ”A Nascent Tidal Dwarf Galaxy Forming within the Northern H I Streamer of M82”, *ApJL* 923

Liu, Q., Abraham, R., ... **Miller, T. B.** ..., et al. 2021, “A Method To Characterize the Wide-Angle Point Spread Function of Astronomical Images”, Accepted *ApJ*, arXiv:2110.11598

Keim, M. A., van Dokkum, P., ... **Miller, T. B.** ... , et al. 2021, “ Tidal Distortions in NGC1052-DF2 and NGC1052-DF4: Independent Evidence for a Lack of Dark Matter ”, submitted to *ApJ*, arXiv:2109.09778

Hill, R., Chapman, S. C., ... **Miller, T. B.** ... , et al. 2021, “A census of the stellar content in the protocluster core SPT2349–56 at  $z = 4.3$ ”, submitted to *MNRAS*, arXiv:2109.04534

Cunningham, D. J. M., Chapman, S. C. .... **Miller, T. B.** ... , et al. 2020, The [C II]/[N II] ratio in  $3 < z < 6$  sub-millimetre galaxies from the South Pole Telescope survey *MNRAS*, 494, 4090

Danieli, S., Lokhorst, D., ... **Miller, T. B.** ... , et al. 2020, “The Dragonfly Wide Field Survey. I. Telescope, Survey Design and Data Characterization”, *ApJ* , 894, 119

Ogiya, G., van den Bosch, F. C., ... **Miller, T. B.** ... et al. 2019, “DASH: a library of dynamical subhalo evolution ”, *MNRAS*, 485, 189.

Mowla, L., van der Wel, A., van Dokkum, P. and **Miller, T. B.**, “A Mass-dependent Slope of the Galaxy Size-Mass Relation out to  $z \sim 3$ : Further Evidence for a Direct Relation between Median Galaxy Size and Median Halo Mass”, 2019, *ApJL*, 872, L13

Marrone, D. P., Spilker, J. S., ... **Miller, T. B.** ... , et al. “Galaxy growth in a massive halo in the first billion years of cosmic history”, *Nature*, 2018, 553, 51

Strandet, M. L., Weiss, A., ... **Miller, T. B.** ... , et al. , “ISM Properties of a Massive Dusty Star-forming Galaxy Discovered at  $z \sim 7$ ”, ApJL, 2017, 842, L15

Orr, M. E., Hayward, C. C., ... **Miller, T. B.** ... , et al. “Stacked Star Formation Rate Profiles of Bursty Galaxies Exhibit “Coherent” Star Formation”, ApJL , 2017, 849, L2

<b>Conference Presentations &amp; Seminars</b>	Galaxies and AGN journal club - John Hopkins U.	Feb. 2022
	Local “Local Group” Group - CCA	Nov. 2021
	Thunch - Princeton	Sept. 2021
	EAS Annual Meeting	July 2021
	AAS 235	Jan 2020
	SMA Offices, Hawaii, USA	Jul. 2015
	Canadian Undergraduate Physics Conference, Queen’s University	Oct. 2014
<b>Observing Experience</b>	Keck I - LRIS	Apr. 2021
	· 2 nights observing	
	Dragonfly Telephoto Array	July 2020 - Present
	· Recurring observer	
	Keck I - MOSFIRE	Nov. 2018
	· 3 nights observing	
<b>Community and Outreach</b>	SMA	July 2016
	· Guest observer for 5 nights	
	Galaxy lunch Organizer	Fall 2019 - Fall 2021
	· Moderated and organized weekly journal club and speaker series	
	Astronomy on tap New Haven: public talk	July 2019
	· “The Hubble constant and our expanding universe”	
	Yale Astronomy Student Council	Fall 2018 - Fall 2021
	· Founding member, worked with students to communicate concerns to faculty and improve graduate program	
	Physics Fun and Discovery Days, Dalhousie University	Summers 2013-2016
	· Performed physics demonstrations to elementary and junior high school students	