Dr. Claude-André Faucher-Giguère

Contact	Department of Physics & Astronomy Northwestern University 2145 Sheridan Road, F243 Evanston, IL 60208	Voice: (847) 467-4647 E-mail: cgiguere@northwestern.edu Web: http://galaxies.northwestern.edu

Research Interests	Theoretical astrophysics and cosmology, including: galaxy formation and evolution, star formation, supermassive black holes, the intergalactic medium, radiation backgrounds, pulsars	
Positions	Assistant Professor of Physics & Astronomy, Northwestern University	2014 -
	Einstein Fellow, Northwestern University	2013 - 2014
	Miller Research Fellow, UC Berkeley	2010 - 2013
Center Appointments	Northwestern-Argonne Institute of Science & Engineering	2018 -
	Colegio De Fisica Fundamental E Interdiciplinaria	2015 -
	Center for Interdisciplinary Exploration and Research in Astrophysics	2014 -
Education	Ph.D. (Astronomy), Harvard University	2010
	A.M. (Astronomy), Harvard University	2007
	B.Sc. (Mathematics and Physics), McGill University	2005
Honors	Scialog Fellow	2019
	Cottrell Scholar Award	2018
	NSF CAREER Award	2017
	Einstein Fellowship	2013-2014
	FQRNT Postdoctoral Fellowship	2011-2013
	Miller Research Fellowship	2010-2013
	Eric R. Keto Prize in Theoretical Astrophysics	2010
	Harvard Merit Fellowship	2009-2010
	FQRNT Graduate Fellowship	2009-2010
	Canadian Space Agency Graduate Fellowship	2007-2009
	NSERC Graduate Fellowship	2005-2009
	Certificates of Distinction in Teaching ($\times 2$)	2006-2007
	Edward Rosenthall Memorial Prize in Mathematics	2005
	E. R. Pounder Prize in Physics	2004
	Herbert Brennen Scholarship in Mathematics	2003-2004
	Canada Millennium Excellence Award	2003-2004
	NSERC Undergraduate Student Research Awards ($\times 3$)	2003-2005
	James McGill Scholarship	2002-2005
	Canada Governor General's Academic Medal	2002
	Canada Governor General's Academic Medal	2000

Grants

Total awarded: $3,140,670. Co-I grants listed only when funds were awarded to Faucher-Giguère.

- Cottrell Scholar Award 2018, "The Physics, Observational Signatures, and Consequences of Galactic Winds Driven by Active Galactic Nuclei" $100,000 2018-2022
  PI: **C.-A. Faucher-Giguère**
- NASA 80NSSC18K1096l, "The Physics, Observational Signatures, and Consequences of AGN-Driven Galactic Winds" $439,609 2018-2021
  PI: **C.-A. Faucher-Giguère**.
- NSF AST-1715216, "Developing and Mining the Next Generation of Physically Predictive Cosmological Simulations" $289,762 2017-2020
  PI: **C.-A. Faucher-Giguère**. Co-PIs: P. Hopkins, D. Kereš, E. Quataert.
- NSF AST-1652522, "CAREER: The Physics of Stellar Feedback and Star Formation Regulation in Galaxies," $794,304 2017-2022
  PI: **C.-A. Faucher-Giguère**
- CXO TM7-18007X, "The Triggering Mechanisms and Accretion Modes of AGN: New Cosmological Simulations to Interpret Chandra Surveys," $80,000 2016-2018
  PI: **C.-A. Faucher-Giguère**. CoI: D. Anglés-Alcázar.
- HST-AR-14562.001, "Combining Statistical Samples of Resolved-ISM Simulated Galaxies with Realistic Mock Observations to Fully Interpret HST and JWST Surveys," $121,870 2016-2019
  PI: **C.-A. Faucher-Giguère**. CoIs: D. Anglés-Alcázar, P. Torrey, D. Kereš, P. Hopkins, G. Snyder, S. Wuyts.
- HST-GO-14681.011, "Tracing Galactic Outflows to the Source: Spatially Resolved Feedback in M83 with COS," $37,942 2016-2019
  PI: A. Aloisi (STScI). CoIs: **C.-A. Faucher-Giguère**, D. Berg, W. Blair, A. Fox, T. Heckman, B. James, K. Long, E. Skillman, J. Tumlinson, B. Whitmore
- HST-GO-14268.022-A, "Project AMIGA: Mapping the Circumgalactic Medium of Andromeda," $21,717 2015-2018
  PI: Nicolas Lehner (Notre-Dame). Co-Is: **C.-A. Faucher-Giguère**, J. Howk, B. Wakker, J. Tumlinson, J. Kalirai, L. Bianchi, R. Bordoloi, T. Brown, J. Bullock, A. Ford, A. Fox, S. Garrison-Kimmel, K. Gilbert, P. Guhathakurta, A. Hernandez, E. Jenkins, F. Lockman, J. O'Meara, M. Peeples, D. Pisano, J. Prochaska, K. Stewart, J. Strader, D. Thilker, J. Werk.
- HST-AR-14293.001-A, "Metallicity and Azimuthal Angle Diagnostics of Inflows and Outflows: Interpreting HST Measurements of Circum-galactic Gas Flows," $110,658 2015-2018
  PI: **C.-A. Faucher-Giguère**. CoIs: D. Anglés-Alcázar, N. Lehner, J. Howk.
- NSF AST-1517491, "Toward Physically-Predictive Modeling of Massive Black Hole Growth and Feedback in Galaxy Formation," $439,662 2015-2018
  PI: **C.-A. Faucher-Giguère**
- NSF AST-1412836, "FIRE: Physically-Predictive Cosmological Simulations of Galaxy

Formation with Resolved Feedback," $290,164 2014-2017
PI: **C.-A. Faucher-Giguère**. Co-PIs: P. Hopkins, D. Kereš.

· NASA NNX15AB22G, "The Physical Nature of the Circum-galactic Medium," $414,982 2014-2017
PI: **C.-A. Faucher-Giguère**

Supercomputing Time

Total awarded as PI: 71,556,981 CPU-hours.

· NASA SMD-17-1204: 4,019,801 CPU-hours 2019-2022
PI: **C.-A. Faucher-Giguère**

· NSF TG-AST-140023 (renewal): 12,904,320 CPU-hours 2018-2019
PI: **C.-A. Faucher-Giguère**

· GLCPC Blue Waters 2018: 7,638,528 CPU-hours 2018-2019
PI: **C.-A. Faucher-Giguère**

· GLCPC Blue Waters 2017: 14,560,000 CPU-hours 2017-2018
PI: **C.-A. Faucher-Giguère**

· NSF TG-AST-140023 (renewal): 2,171,364 CPU-hours 2017-2018
PI: **C.-A. Faucher-Giguère**

· NASA SMD-16-7561: 12,000,000 CPU-hours 2016-2018
PI: **C.-A. Faucher-Giguère**

· NSF TG-AST160048: 3,946,325 CPU-hours 2016-2017
Co-PIs: **C.-A. Faucher-Giguère**, D. Anglés-Alcázar, R. Feldmann, E. Quataert

· NASA SMD-15-6530: 2,457,602 CPU-hours 2015-2016
PI: **C.-A. Faucher-Giguère**

· NSF TG-AST140023 (renewal): 4,000,000 CPU-hours 2015-2016
PI: **C.-A. Faucher-Giguère**

· NASA SMD-14-5189: 1,474,571 CPU-hours 2014-2015
PI: **C.-A. Faucher-Giguère**

· NSF TG-AST140023: 1,407,764 CPU-hours 2014-2015
PI: **C.-A. Faucher-Giguère**

· NSF TG-AST120025 (renewal), 3,016,706 CPU-hours 2013-2014
Co-PIs: **C.-A. Faucher-Giguère**, D. Kereš, P. Hopkins

· NSF TG-AST120025: 1,760,000 CPU-hours 2012-2013
Co-PIs: **C.-A. Faucher-Giguère**: D.Kereš, P. Hopkins

· NSF TG-AST110025, 200,000 CPU-hours 2011-2012
PI: **C.-A. Faucher-Giguère**

Refereed Publications

The following are the publications on which I am the senior author or an equal collaborator, grouped by research area. Northwestern graduate students and postdoctoral fellows are underlined.

Massive black hole growth and feedback:

109. Martizzi, D., Quataert, E., **Faucher-Giguère, C.-A.**, & Fielding, D. 2019, "Simulations of Jet Heating in Galaxy Clusters: Successes and Numerical Challenges," *MNRAS*, 483, 2465.

108. Richings, A. J. & **Faucher-Giguère, C.-A.** 2018, "Radiative cooling of swept up gas in AGN-driven galactic winds and its implications for molecular outflows," *MNRAS*, 478, 3100.

107. Richings, A. J. & **Faucher-Giguère, C.-A.** 2018, "The Origin of Fast Molecular Outflows in Quasars: Molecule Formation in AGN-driven Galactic Winds," *MNRAS*, 474, 3673.

106. Anglés-Alcázar, D., **Faucher-Giguère, C.-A.**, Quataert, E., Hopkins, P. F., Feldmann, R., Torrey, P., Wetzel, A., & Kereš, D. 2017, "Black Holes on FIRE: Stellar Feedback Limits Early Feeding of Galactic Nuclei," *MNRAS Letters*, 472, L109.

105. Anglés-Alcázar, D., Davé, R., **Faucher-Giguère, C.-A.**, Özel, F., & Hopkins, P. F. 2017, "Gravitational Torque-Driven Black Hole Growth and Feedback in Cosmological Simulations," *MNRAS*, 464, 2840.

104. Stern, J., **Faucher-Giguère, C.-A.**, Zakamska, N., & Hennawi, J. 2016, "Constraining the Dynamical Importance of Hot Gas and Radiation Pressure in Quasar Outflows Using Emission Line Ratios," *ApJ*, 819, 130.

103. Nims, J., Quataert, E., & **Faucher-Giguère, C.-A.** 2015, "Observational Signatures of Galactic Winds Powered by Active Galactic Nuclei," *MNRAS*, 447, 3612.

102. **Faucher-Giguère, C.-A.** & Quataert, E. 2012, "The Physics of Galactic Winds Driven by Active Galactic Nuclei," *MNRAS*, 425, 605.

101. **Faucher-Giguère, C.-A.**, Quataert, E., & Murray, N. 2012, "A Physical Model of FeLoBALs: Implications for Quasar Feedback," *MNRAS*, 420, 1347.

Star formation and stellar feedback:

100. **Faucher-Giguère, C.-A.** 2018, "A Model for the Origin of Bursty Star Formation in Galaxies," *MNRAS*, 473, 3717.

99. Grudić, M. Y., Hopkins, P. F., **Faucher-Giguère, C.-A.**, Quataert, E., Murray, N. & Kereš, D. 2018, "When Feedback Fails: The Scaling and Saturation of Star Formation Efficiency," *MNRAS*, 475, 3511.

98. Torrey, P., Hopkins, P. F., **Faucher-Giguère, C.-A.**, Vogelsberger, M., Quataert, E., Kereš, D., & Murray, N. 2017, "An Instability of Feedback Regulated Star Formation in Galactic Nuclei," *MNRAS*, 467, 2301.

97. Martizzi, D., Fielding, D., **Faucher-Giguère, C.-A.**, & Quataert, E. 2016, "Supernova Feedback in a Local Vertically Stratified Medium: Interstellar Turbulence and Galactic Winds," *MNRAS*, 459, 2311.

96. Martizzi, D., **Faucher-Giguère, C.-A.**, & Quataert, E. 2015, "Supernova Feedback in an Inhomogeneous Interstellar Medium," *MNRAS*, 450, 504.

95. **Faucher-Giguère, C.-A.**, Quataert, E., & Hopkins, P. F. 2013, "Feedback-Regulated Star Formation in Molecular Clouds and Galactic Discs," *MNRAS*, 433, 1970.

Circumgalactic medium:

94. Hafen, Z., **Faucher-Giguère, C.-A.**, Anglés-Alcázar, D., Stern, J., Kereš, D., Hopkins, P. F., Quataert, E., Murray, N., Wetzel, A., Chan, T. K., El-Badry, K., Garrison-Kimmel, S., Hummels, C., & Esmerian, C. 2018, "The Origins of the Circumgalactic Medium in the FIRE Simulations," *MNRAS*, submitted [arXiv:1811.11753].

93. Stern, J., **Faucher-Giguère, C.-A.**, Hennawi, J. F., Hafen, Z. H., Johnson, S. D., & Fielding, D. 2018, "Does circumgalactic OVI trace low-pressure gas beyond the accretion shock? Clues from HI and low-ion absorption, line kinematics, and dust extinction," *ApJ*, 865, 91.

92. Anglés-Alcázar, D., **Faucher-Giguère, C.-A.**, Kereš, D., Hopkins, P. F., Quataert, E., & Murray, N. 2017, "The Cosmic Baryon Cycle and Galaxy Mass Assembly in the FIRE Simulations," *MNRAS*, 470, 4698.

91. Muratov, A., Kereš, D., **Faucher-Giguère, C.-A.**, Hopkins, P. F., Ma, X., Anglés-Alcázar, D., Chan, T. K., Torrey, P., Hafen, Z. H., Quataert, E., & Murray, N. 2017, "Metal Flows of the Circumgalactic Medium, and the Metal Budget in Galactic Halos," *MNRAS*, 468, 4170.

90. Hafen, Z., **Faucher-Giguère, C.-A.**, Anglés-Alcázar, D., Kereš, D., Feldmann, R., Chan, T. K., Quataert, E., Murray, N., & Hopkins, P. F. 2017, "Low-Redshift Lyman Limit Systems as Diagnostics of Cosmological Inflows and Outflows," *MNRAS*, 469, 2292.

89. **Faucher-Giguère, C.-A.**, Feldmann, R., Quataert, E., Kereš, D., Hopkins, P. F., & Murray, N. 2016, "A Stellar Feedback Origin for Neutral Hydrogen in High-Redshift Quasar-Mass Halos," *MNRAS Letters*, 461, 32.

88. Sravan, N., **Faucher-Giguère, C.-A.**, van de Voort, F., Kereš, D., Muratov, A. L., Hopkins, P. F., Feldmann, R., Quataert, E., & Murray, N. 2016, "Strongly Time-Variable Ultra-Violet Metal Line Emission from the Circum-Galactic Medium of High-Redshift Galaxies," *MNRAS*, 463, 120.

87. Muratov, A., Kereš, D., **Faucher-Giguère, C.-A.**, Hopkins, P. F., Quataert, E., & Murray, N. 2015, "Gusty, Gaseous Flows of FIRE: Galactic Winds in Cosmological Simulations with Explicit Stellar Feedback," *MNRAS*, 454, 2691.

86. **Faucher-Giguère, C.-A.**, Hopkins, P. F., Kereš, D., Muratov, A., Quataert, E., & Murray, N. 2015, "Neutral Hydrogen in Galaxy Halos at the Peak of the Cosmic Star Formation History," *MNRAS*, 449, 987.

85. **Faucher-Giguère, C.-A.**, Kereš, D., & Ma, C.-P. 2011, "The Baryonic As-

sembly of Dark Matter Halos," *MNRAS*, 417, 2982.

84. **Faucher-Giguère, C.-A.** & Kereš, D. 2011, "The Small Covering Factor of Cold Accretion Streams," *MNRAS Letters*, 412, 118.

83. **Faucher-Giguère, C.-A.**, Kereš, D., Dijkstra, M., Hernquist, L., & Zaldarriaga, M. 2010, "Lyman$-\alpha$ Cooling Emission from Galaxy Formation," *ApJ*, 725, 633.

Intergalactic medium and cosmic ionizing background:

82. Kuhlen, M. & **Faucher-Giguère, C.-A** 2012, "Concordance Models of Reionization: Implications for Faint Galaxies and Escape Fraction Evolution," *MNRAS*, 423, 862.

81. McQuinn, M., Oh, S. P., & **Faucher-Giguère, C.-A.** 2011, "On Lyman-limit Systems and the Evolution of the Intergalactic Ionizing Background," *ApJ*, 743, 82.

80. Lidz, A., **Faucher-Giguère, C.-A.**, Dall'Aglio, A., McQuinn, M., Fechner, C., Zaldarriaga, M., Hernquist, L., & Dutta, S. 2010, "A Measurement of Small Scale Structure in the $2.2 \leq z \leq 4.2$ Lyman$-\alpha$ Forest," *ApJ*, 718, 199.

79. **Faucher-Giguère, C.-A.**, Lidz, A., Zaldarriaga, M., & Hernquist, L. 2009, "A New Calculation of the Ionizing Background Spectrum and the Effects of HeII Reionization," *ApJ*, 703, 1416.

78. **Faucher-Giguère, C.-A.**, Lidz, A., Hernquist, L., & Zaldarriaga, M. 2008, "Evolution of the Intergalactic Opacity: Implications for the Ionizing Background, Cosmic Star Formation, and Quasar Activity," *ApJ*, 688, 85.

77. **Faucher-Giguère, C.-A.**, Lidz, A., Hernquist, L., & Zaldarriaga, M. 2008, "A Flat Photoionization Rate a $2 \leq z \leq 4.2$: Evidence for a Stellar-Dominated UV Background and Against a Steep Decline of Star Formation Beyond $z \sim 3$," *ApJL*, 682, 9.

76. **Faucher-Giguère, C.-A.**, Prochaska, J. X., Lidz, A., Hernquist, L., & Zaldarriaga, M. 2008, "A Direct Precision Measurement of the Intergalactic Lyman-α Opacity at $2 \leq z \leq 4.2$," *ApJ*, 681, 831.

75. **Faucher-Giguère, C.-A.**, Lidz, A., Zaldarriaga, M., & Hernquist, L. 2008, "The Line-of-Sight Proximity Effect and the Mass of Quasar Host Halos," *ApJ*, 673, 39.

Pulsars:

74. **Faucher-Giguère, C.-A.** & Loeb 2011, "Pulsar-Black Hole Binaries at the Galactic Center," *MNRAS*, 415, 3951.

73. **Faucher-Giguère, C.-A.** & Loeb, A. 2010, "The Pulsar Contribution to the Gamma-Ray Background," *JCAP*, 1, 5.

72. **Faucher-Giguère, C.-A.** & Kaspi, V. M. 2006, "Birth and Evolution of Iso-

lated Radio Pulsars," *ApJ*, 643, 332.

Other research articles:

71. Liang, L., Feldmann, R., Kereš, D., Scoville, N. Z., Hayward, C. C., **Faucher-Giguère, C.-A.**, Schreiber, C., Ma, X., & Hopkins, P. F. 2019, "On the dust temperatures of high redshift galaxies," submitted to *MNRAS* [arXiv:1902.10727].
70. Ma, X., Hayward, C. C., Casey, C. M., Hopkins, P. F., Quataert, E., Liang, L., **Faucher-Giguère, C.-A.**, Feldmann, R., & Kereš, D. 2019, "Dust extinction, dust emission, and dust temperature in galaxies at z≥5: a view from the FIRE-2 simulations," submitted to *MNRAS* [arXiv:1902.10152].
69. Graus, A. S., Bullock, J. S., Fitts, Alex, Cooper, M. C., Boylan-Kolchin, M., Weisz, D. R., Wetzel, A., Feldmann, R., **Faucher-Giguère, C.-A.**, Quataert, E., & Hopkins, P. F. 2019, "A Predicted Correlation Between Age Gradient and Star Formation History in FIRE Dwarf Galaxies," submitted to *MNRAS* [arXiv:1901.05487].
68. Chan, T. K., Kereš, D., Hopkins, P. F., Quataert, E., Su, K.-Y., Hayward, C. C., & **Faucher-Giguere, C.-A** 2018, "Cosmic ray feedback in the FIRE simulations: constraining cosmic ray propagation with GeV gamma ray emission," submitted to *MNRAS* [arXiv:1812.10496].
67. Su, K.-Y., Hopkins, P. F., Hayward, C. C., **Faucher-Giguère, C.-A.**, Kereš, D., Ma, X., Orr, M. E., Chan, T. K., & Robles, Victor H. 2018, "Cosmic Rays or Turbulence can Suppress Cooling Flows (Where Thermal Heating or Momentum Injection Fail)," submitted to *MNRAS* [arXiv:1812.03997].
66. Wheeler, C., Hopkins, P. F., Pace, A. B., Garrison-Kimmel, S., Boylan-Kolchin, M., Wetzel, A., Bullock, J. S., Kereš, D., **Faucher-Giguère, C.-A.**, & Quataert, E. 2018, "Be it therefore resolved: Cosmological Simulations of Dwarf Galaxies with Extreme Resolution," submitted to *MNRAS* [arXiv:1812.02749].
65. Hopkins, P. F., Grudić, M. Y., Wetzel, A. R., Kereš, D., **Faucher-Giguère, C.-A.**, Ma, X., Murray, N. & Butcher, N. 2018, "Radiative Stellar Feedback in Galaxy Formation: Methods and Physics," submitted to *MNRAS* [arXiv:1811.12462].
64. Su, K. Y., Hopkins, P. F., Quataert, E., Hayward, C. C., Ma, X., **Faucher-Giguère, C.-A.**, Kereš, D., Orr, M. E., & Robles, V. H. 2018, "The failure of stellar feedback, magnetic fields, conduction, and morphological quenching in maintaining red galaxies," submitted to *MNRAS* [arXiv:1809.09120].
63. Necib, L., Lisanti, M., Garrison-Kimmel, S., Wetzel, A., Sanderson, R., Hopkins, P. F., **Faucher-Giguère, C.-A.**, & Kereš, D. 2018, "Under the Firelight: Stellar Tracers of the Local Dark Matter Velocity Distribution in the Milky Way," submitted to *ApJ* [arXiv:1810.12301].
62. Grudić, M. Y., Hopkins, P. F., Lee, E. J., Murray, N., **Faucher-Giguère, C.-A.**, & Johnson, L. C. 2018, "On the Nature of Variations in the Measured Star Formation Efficiency of Molecular Cloud," submitted to *MNRAS* [arXiv:1809.08348].

61. Sanderson, R. E., Wetzel, A., Loebman, S., Sharma, S., Hopkins, P. F., Garrison-Kimmel, S., **Faucher-Giguère, C.-A.**, Kereš, D., & Quataert, E., 2018 "Synthetic Gaia surveys from the FIRE cosmological simulations of Milky-Way-mass galaxies," submitted to *ApJ* [arXiv:1806.10564].

60. Garrison-Kimmel, S., Hopkins, P. F., Wetzel, A., Bullock, J. S., Boylan-Kolchin, M., Kereš, D., **Faucher-Giguère, C.-A.**, El-Badry, K., Lamberts, A., Quataert, E., & Sanderson, R. 2018, "The Local Group on FIRE: Dwarf galaxy populations across a suite of hydrodynamic simulations," submitted to *MNRAS* [arXiv:1806.04143].

59. 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," to appear in *MNRAS* [arXiv: 1805.12199].

58. Feldmann, R., **Faucher-Giguère, C.-A.**, & Kereš, D. 2019, "The galaxy – halo connection in low mass halos," *ApJ Letters*, 871, L21.

57. Smith, A., Ma, X., Bromm, V., Finkelstein, S. L., Hopkins, P. F., **Faucher-Giguère, C.-A.**, & Kereš, D. 2019, "The physics of Lyman-alpha escape from high-redshift galaxies," *MNRAS*, 484, 39.

56. Hung, C.-L., Hayward, C. C., Yuan, T., Boylan-Kolchin, M., **Faucher-Giguère, C.-A.**, Hopkins, P., Kereš, D., Murray, N. & Wetzel, A. 2019, "What drives the evolution of gas kinematics in star-forming galaxies?," *MNRAS*, 482, 5125.

55. Bozek, B., Fitts, A., Boylan-Kolchin, M., Garrison-Kimmel, S., Abazajian, K., Bullock, J. S., Kereš, D., **Faucher-Giguère, C.-A.**, Wetzel, A., & Feldmann, R. 2019, "Warm FIRE: Simulating Galaxy Formation with Resonant Sterile Neutrino Dark Matter," *MNRAS*, 483, 4086.

54. Sanderson, R. E., Garrison-Kimmel, S., Wetzel, A., Chan, T., K., Hopkins, P. F., Kereš, D., Escala, I., **Faucher-Giguère, C.-A.**, & Ma, X. 2018, "Reconciling observed and simulated stellar halo masses," *ApJ*, 869, 12.

53. Garrison-Kimmel, S., Hopkins, P. F., Wetzel, A., El-Badry, K., Sanderson, R. E., Bullock, J. S., 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," *MNRAS*, 481, 4133.

52. 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?," *MNRAS*, 480, 652.

51. Fitts, A., Boylan-Kolchin, M., Bullock, J. S., Weisz, D. R., El-Badry, K., Wheeler, C., **Faucher-Giguère, C.-A.**, Quataert, E., Hopkins, P. F., Kereš, D., Wetzel, A., & Hayward, C. 2018, "No Assembly Required: Mergers are

Mostly Irrelevant for the Growth of Low-mass Dwarf Galaxies," *MNRAS*, 479, 319.

50. Lamberts, A., Garrison-Kimmel, S., Hopkins, P., Quataert, E., Bullock, J., **Faucher-Giguère, C.-A.**, Wetzel, A., Kereš, D., Drango, K., & Sanderson, R. 2018, "Predicting the binary black hole population of the Milky Way with cosmological simulations," *MNRAS*, 480, 2704.
49. Su, K.-Y., Hopkins, P. F., Hayward, C. C., Ma, X., Boylan-Kolchin, M., Kasen, D., Kereš, D, **Faucher-Giguère, C.-A.** & Orr, M. E. 2018, "Discrete Effects in Stellar Feedback: Individual Supernovae, Hypernovae, and IMF Sampling in Dwarf Galaxies," *MNRAS*, 480, 1666.
48. Chan, T. K., Kereš, D., Wetzel, A., Hopkins, P. F., **Faucher-Giguère, C.-A.**, El-Badry, K., Garrison-Kimmel, S., & Boylan-Kolchin, M. 2018, "The origin of ultra diffuse galaxies: stellar feedback and quenching," *MNRAS*, 478, 906.
47. Liang, L., Feldmann, R., **Faucher-Giguère, C.-A.**, Kereš, D., Hopkins, P. F., Hayward, C. C., Quataert, E. & Scoville, N. 2018, "Submillimeter flux as a probe of molecular ISM mass in high-z galaxies," *MNRAS Letters*, 478, L83.
46. 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," *MNRAS*, 477, 1536.
45. Escala, I., Wetzel, A., Kirby, E. N., Hopkins, P. F., Ma, X., Wheeler, C., Kereš, D., **Faucher-Giguère, C.-A.**, & Quataert, E. 2018, "Modelling chemical abundance distributions for dwarf galaxies in the Local Group: the impact of turbulent metal diffusion," *MNRAS*, 474, 2194.
44. Ma, X., Hopkins, P. F., Boylan-Kolchin, M., **Faucher-Giguère, C.-A.**, Quataert, E., Feldmann, R., Garrison-Kimmel, S., Hayward, C. C., Kereš, D. & Wetzel, A. 2018, "Simulating galaxies in the reionization era with FIRE-2: morphologies and sizes," *MNRAS*, 477, 219.
43. Hopkins, P. F., Wetzel, A., Kereš, D., **Faucher-Giguère, C.-A.**, Quataert, E., Boylan-Kolchin, M., Murray, N., Hayward, C., & El-Badry, K. 2018, "How To Model Supernovae in Simulations of Star and Galaxy Formation," *MNRAS*, 477, 1578.
42. Ma, X., Hopkins, P. F., Garrison-Kimmel, S., **Faucher-Giguère, C.-A.**, Quataert, E., Boylan-Kolchin, M., Hayward, C. C., Feldmann, R., & Kereš, D. 2018, "Simulating galaxies in the reionization era with FIRE-2: galaxy scaling relations, stellar mass functions, and luminosity functions," *MNRAS*, 477, 219.
41. van de Voort, F., Quataert, E., **Faucher-Giguère, C.-A.**, Kereš, D., Hopkins, P. F., Chan, T. K., Feldmann, R. & Hafen, Z. 2018, "On the deuterium abundance and the importance of stellar mass loss in the interstellar and intergalactic medium," *MNRAS*, 477, 80.

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39. Orr, M., Hayward, C., Hopkins, P. F., Chan, T. K., **Faucher-Giguère, C.-A.**, Feldmann, R., Kereš, D., Murray, N., & Quataert, E. 2018, "What FIREs Up Star Formation: the Emergence of the Kennicutt-Schmidt Law from Feedback," *MNRAS*, 478, 3653.

38. Orr, M. E., Hayward, C. C., Nelson, E. J., Hopkins, P. F., **Faucher-Giguère, C.-A.**, Kereš, D., Chan, T. K., Schmitz, D. M., & Miller, T. B. 2017, "Stacked star formation rate profiles of bursty galaxies exhibit 'coherent' star formation," *ApJ Letters*, 849, L2.

37. Kim, J.-h., Ma, X., Grudić, M. Y., Hopkins, P. F., Hayward, C. C., Wetzel, A., **Faucher-Giguère, C.-A.**, Kereš, D., Garrison-Kimmel, S., & Murray, N. 2018, "Formation of Globular Cluster Candidates in Merging Proto-galaxies at High Redshift: A View from the FIRE Cosmological Simulations," *MNRAS*, 474, 4232.

36. Su, K.-Y., Hayward, C. C., Hopkins, P. F., Quataert, E., **Faucher-Giguère, C.-A.**, & Kereš, D. 2018, "Stellar feedback strongly alters the amplification and morphology of galactic magnetic fields," *MNRAS Letters*, 473, L111.

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33. Howk, J. C., Wotta, C. B., Berg, M. A., Lehner, N., Lockman, F. J., Hafen, Z., Pisano, D. J., **Faucher-Giguère, C.-A.**, Wakker, B. P., Prochaska, J. X., Wolfe, S. A., Ribaudo, J., Barger, K. A., Corlies, L., Fox, A. J., Jenkins, E. B., Kalirai, J., O'Meara, J. M., Peeples, M. S., Stewart, K. R. & Strader, J. 2017, "Project AMIGA: A Minimal Covering Factor for Optically Thick Circumgalactic Gas Around Andromeda," *ApJ*, 846, 141.

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28. Su, K.-Y., Hopkins P. F., Hayward, C. C., **Faucher-Giguère, C.-A.**, Kereš, D., Ma, X., & Robles, V. 2017, "Feedback First: the Surprisingly Weak Effects of Magnetic Fields, Viscosity, Conduction, and Metal Diffusion on Galaxy Formation," *MNRAS*, 471, 144.
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26. Fielding, D., Quataert, E., Martizzi, D., & **Faucher-Giguère, C.-A.** 2017, "How Supernovae Launch Galactic Winds," *MNRAS Letters*, 470, L39.
25. Feldmann, R., Quataert, E., Hopkins, P. F., **Faucher-Giguère, C.-A.**, & Kereš, D. 2017, "Colours, Star Formation Rates, and Environments of Star Forming and Quiescent Galaxies at the Cosmic Noon," *MNRAS*, 470, 1050.
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23. El-Badry, K., Wetzel, A. R., 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," *ApJ*, 835, 193.
22. Ma, X., Hopkins, P. F., Wetzel, A. R., Kirby, E. N., Anglés-Alcázar, D., **Faucher-Giguère, C.-A.**, Kereš, D., & Quataert, E. 2017, "The Structure and Dynamical Evolution of the Stellar Disk of a Simulated Milky Way-Mass Galaxy," *MNRAS*, 467, 2430.
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19. van de Voort, F., Quataert, E., Hopkins, P. F., **Faucher-Giguère, C.-A.**, Feldmann, R., Kereš, D., Chan, T. K., & Hafen, Z. H. 2016, "The Impact of Stellar Feedback on Hot Gas in Galaxy Haloes: the Sunyaev-Zel'dovich Effect and Soft X-ray Emission," *MNRAS*, 463, 4533.
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17. Ma, X., Kasen, D., Hopkins, P. F., Quataert, E., **Faucher-Giguère, C.-A.**, Kereš, D., & Murray, N. 2016, "Binary Stars Can Provide the 'Missing Photons' Needed for Reionization," *MNRAS*, 459, 3614.
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15. Feldmann, R., Hopkins, P. F., Quataert, E., **Faucher-Giguère, C.-A.**, & Kereš, D. 2016, "The Formation of Massive, Quiescent Galaxies at Cosmic Noon," *MNRAS Letters*, 458, 14.
14. Li, C., de Grijs, R., Deng, L., Geller, A. M., Xin, Y., Hu, Y. & **Faucher-Giguère, C.-A.** 2016, "Formation of new stellar populations from gas accreted by massive young star clusters," *Nature*, 529, 502.
13. Hopkins, P. F., Torrey, P., **Faucher-Giguère, C.-A.**, Quataert, E. 2016, & Murray, N., "Stellar and Quasar Feedback in Concert: Effects on AGN Accretion, Obscuration, and Outflows," *MNRAS*, 458, 816.
12. Ma, X., Hopkins, P. F., **Faucher-Giguère, C.-A.**, Zolman, N., Muratov, A. L., Kereš, D. & Quataert, E. 2016, "The Origin and Evolution of the Galaxy Mass-Metallicity Relation," *MNRAS*, 456, 2140.
11. Chan, T. K., Kereš, D., Oñorbe, J., Hopkins, P. F., Muratov, A. L., **Faucher-Giguère, C.-A.**, & Quataert, E. 2015, "The Impact of Baryonic Physics on the Structure of Dark Matter Halos: the View from the FIRE Cosmological Simulations," *MNRAS*, 454, 2691.
10. Oñorbe, J., Boylan-Kolchin, M., Bullock, J. S., Hopkins, P. F., Kereš, D., **Faucher-Giguère, C.-A.**, Quataert, E., & Murray, N. 2015, "Forged in FIRE: Cusps, Cores, and Baryons in Low-Mass Dwarf Galaxies," *MNRAS*, 454, 2092.
9. Narayanan, D., Turk, M., Feldmann, R., Robitaille, T., Hopkins, P. F., Thompson, R., Hayward, C., Ball, D., & **Faucher-Giguère, C.-A.**, & Kereš, D. 2015, "The Formation of Submillimetre-Bright Galaxies from Gas Infall over a Billion Years," *Nature*, 525, 496.

8. Ma, X., Kasen, D., Hopkins, P. F., **Faucher-Giguère, C.-A.**, Quataert, E., Kereš, D. & Murray, N. 2015, "The Difficulty of Getting High Escape Fractions of Ionizing Photons from High-redshift Galaxies: a View from the FIRE Cosmological Simulations," *MNRAS*, 453, 960.
7. van de Voort, F., Davis, T. A., Kereš, D., Quataert, E., **Faucher-Giguère, C.-A.**, & Hopkins, P. F. 2015, "The Creation and Persistence of a Misaligned Gas Disc in a Simulated Early-Type Galaxy," *MNRAS*, 451, 3269.
6. van de Voort, F., Quataert, E., Hopkins, P. F., Kereš, D., &, **Faucher-Giguère, C.-A.** 2015, "Galactic r-process Enrichment by Neutron Star Mergers in Cosmological Simulations of a Milky Way-Mass Galaxy," *MNRAS*, 447, 140.
5. Hopkins, P. F., Kereš, D., Oñorbe, J., **Faucher-Giguère, C.-A.**, Quataert, E., Murray, N., & Bullock, J. S. 2014, "Galaxies on FIRE (Feedback In Realistic Environments): Stellar Feedback Explains Cosmologically Inefficient Star Formation," *MNRAS*, 445, 581.
4. D'Onghia, E., Vogelsberger, M., **Faucher-Giguère, C.-A.**, & Hernquist, L. 2010, "Quasi-Resonant Theory of Tidal Interactions," *ApJ*, 725, 353.
3. McQuinn, M., Lidz, A., Zaldarriaga, M., Hernquist, L., Hopkins, P. F., Dutta, S., & **Faucher-Giguère, C.-A.** 2009, "HeII Reionization and its Effects on the IGM," *ApJ*, 694, 842.
2. Champion, D. J., Ransom, S. M., Lazarus, P., Camilo, F., Kaspi, V. M., Nice, D. J., Freire, P. C. C., Cordes, J. M., Hessels, J. W. T., Bassa, C., Lorimer, D. R., Stairs, I. H., van Leeuwen, J., Arzoumnian, Z., Backer, D. C., Bhat, N. D. R., Chatterjee, S., Crawford, F., Deneva, J. S., **Faucher-Giguère, C.-A.**, Gaensler, B. M., Han, J. L., Jenet, F. A., Kasian, L., Kondratiev, V. I., Kramer, M., Lazio, J., McLaughlin, M. A., Stappers, B. W., Venkataraman, A., & Vlemmings, W. 2008, "Arecibo Discovery of an Eccentric Binary Millisecond Pulsar," *Science*, 320, 1309.
1. Cordes, J. M., Freire, P. C. C., Lorimer, D. R., Camilo, F., Champion, D. J., Nice, D. J., Ramachandran, R., Hessels, J. W. T., Vlemmings, W., van Leeuwen, J., Ransom, S. M., Bhat, N. D. R., Arzoumanian, Z., McLaughlin, M. A., Kaspi, V. M., Kasian, L., Deneva, J. S., Reid, B., Chatterjee, S., Han, J. L., Backer, D. C., Stairs, I. H., Deshpande, A. A., **Faucher-Giguère, C.-A.** 2006, "Arecibo Pulsar Survey Using ALFA. I. Survey Strategy and First Discoveries," *ApJ*, 637, 446.

PERSPECTIVE ARTICLES

2. **Faucher-Giguère, C.-A.**, "Recent Progress in Simulating Galaxy Formation from the Largest to the Smallest Scales," *Nature Astronomy*, 2, 368.
1. **Faucher-Giguère, C.-A.**, Lidz, A., & Hernquist, L. 2008, "Numerical Simulations Unravel the Cosmic Web," *Science*, 319, 52.

BOOK CHAPTER

1. **Faucher-Giguère, C.-A.** 2017, "Observational Diagnostics of Gas Flows: Insights from Cosmological Simulations," in *Gas Accretion onto Galaxies*, ed. Fox, A. & Davé, R. Astrophysics and Space Science Library, vol 430. Springer.

CONFERENCE PROCEEDINGS

5. **Faucher-Giguère, C.-A.** 2012, "Quasar Absorption Lines from Radiative Shocks: Implications for Multiphase Outflows and Feedback," in *Proceedings of AGN Winds in Charleston*, ed. G. Chartas, K. Leighly, and F. Hamann (Charleston: ASP), 460.
4. **Faucher-Giguère, C.-A.**, Lidz, A., Hernquist, L., & Zaldarriaga, M. 2008, "Evolution of the IGM at $2 \leq z \leq 4.2$: Implications for Cosmic Star Formation and Quasar Activity," in *Proceedings of the 1st Subaru International Conference: Panoramic Views of Galaxy Formation and Evolution*, ed. T. Kodama, T. Yamada, and K. Aoki (Hayama: ASP), 399.
3. **Faucher-Giguère, C.-A.**, Prochaska, J. X., Lidz, A., Hernquist, L., & Zaldarriaga, M. 2007, "A Direct Precision Measurement of the Intergalactic Lyman-α Opacity at $2 \leq z \leq 4.2$," in *Proceedings of A Century of Cosmology: Past, Present, and Future*, ed. G. Chincarini, P. Saracco, and M. Bolzonella (Venice: Nuovo Cim.), 122B.
2. **Faucher-Giguère, C.-A.** & Kaspi, V. M. 2008, "Birth and Evolution of Isolated Radio Pulsars," in *40 Years of Pulsars: Millisecond Pulsars, Magnetars, and More*, ed. C. Bassa, Z. Wang, A. Cumming, and V. M. Kaspi (Montréal: AIP), 607.
1. van Leeuwen, J., Cordes, J. M., Lorimer, D. R., Freire, P. C. C., Camilo, F., Stairs, I. H., Nice, D. J., Champion, D. J., Ramachandran, R., Faulkner, A. J., Lyne, A. G., Ransom, S. M., Arzoumanian, Z., Manchester, R. N., McLaughlin, M. A., Hessels, J. W. T., Vlemmings, W., Deshpande, A. A., Bhat, N. D. R., Chatterjee, S., Han, J. L., Gaensler, B. M., Kasian, L., Deneva, J. S., Reid, B., Lazio, T. J. W., Kaspi, V. M., Crawford, F., Lommen, A. N., Backer, D. C., Kramer, M., Stappers, B. W., Hobbs, G. B., Possenti, A., D'Amico, N., **Faucher-Giguère, C.-A.**, Burgay, M. 2005, "Arecibo and the ALFA Pulsar Survey," in *Proceedings of the 2005 Lake Hanas International Pulsar Symposium*, ed. N. Wang, R. N. Manchester, B. J. Rickett and A. Esamdin (Lake Hanas: ChJAA), 311.

SCIENTIFIC MEMOS

1. **Faucher-Giguère, C.-A.** & Kaspi, V. M. 2005, "Updated Simulations of Pulsar Surveys: Optimizing ALFA," http://astrosun2.astro.cornell.edu/∼cordes/PALFA/.

INVITED COLLOQUIA AND SEMINARS

97. HEP Divisional Seminar, Argonne National Laboratory, April 2019.
96. Physics & Astronomy Colloquium, Northwestern University, October 2018.
95. Astrophysics Seminar, Institute for Advanced Study, Princeton, May 2018.
94. Astronomy Colloquium, Harvard-Smithsonian CfA, May 2018.

93. Astronomy Colloquium, Texas A&M University, March 2017.
92. Astronomy Colloquium, Yale University, March 2017.
91. Astronomy Seminar, Center for Computational Astrophysics, March 2017.
90. Astronomy Colloquium, University of Michigan, September 2016.
89. Astronomy Colloquium, University of Wisconsin, Madison, March 2016.
88. Astrophysics Seminar, Princeton University, September 2015.
87. Astrophysics Seminar, Michigan State University, September 2015.
86. Astrophysics Seminar, University of Pittsburgh, April 2015.
85. Cosmology Seminar, University of Chicago, October 2014.
84. Astrophysics Colloquium, Space Telescope Science Institute, September 2014.
83. Astrophysics Seminar, Rutgers University, September 2014.
82. Physics Colloquium, University of Wisconsin, Milwaukee, March 2014.
81. Astronomy Colloquium, Indiana University, Bloomington, February 2014.
80. Astronomy Colloquium, University of Notre Dame, February 2014.
79. Astronomy Colloquium, University of California, Berkeley, January 2014.
78. Physics Colloquium, Argonne National Laboratory, November 2013.
77. Astronomy Seminar, University of Waterloo, November 2013.
76. Cosmology Seminar, Perimeter Institute, November 2013.
75. Astrophysics Colloquium, Stanford University, October 2013.
74. Astronomy Colloquium, UI Urbana-Champaign, September 2013.
73. Astrophysics Seminar, University of Zurich, July 2013.
72. Astronomy Colloquium, UC San Diego, May 2013.
71. Astronomy Colloquium, University of Maryland, College Park, March 2013.
70. Astronomy Colloquium, University of Arizona, February 2013.
69. Astrophysics Colloquium, Massachusetts Institute of Technology, February 2013.
68. Astrophysics Colloquium, Northwestern University, January 2013.
67. Astronomy Colloquium, Caltech, February 2012.
66. Theoretical Astrophysics Seminar, UC Berkeley, February 2012.
65. Astrophysics Colloquium, UN Las Vegas, February 2011.
64. Astrophysics Seminar, CITA, February 2011.
63. Astrophysics Seminar, McGill University, February 2011.
62. Astrophysics Seminar, UC Santa Cruz, November 2010.
61. Cosmology Seminar, UC Santa Cruz, November 2009.
60. Theoretical Astrophysics Seminar, UC Berkeley, November 2009.
59. Astronomy Seminar, Carnegie Observatories, November 2009.
58. Astronomy Seminar, California Institute of Technology, November 2009.
57. Astronomy Lunch Talk, UC Santa Barbara, November 2009.
56. Astrophysics Seminar, Institute for Advanced Study, Princeton, October 2009.
55. Cosmology Seminar, Max Planck Institute for Astrophysics, October 2008.

54. Joint Harvard / MIT Pulsar / Supernova Remnant Seminar, March 2006.

INVITED CONFERENCE TALKS

53. "Cosmic turbulence and magnetic fields: physics of baryonic matter across time and scales," Corsica, France, November 2019.
52. "The Circumgalactic Medium Berlin 2019," Berlin, Germany, October 2019.
51. "From AGN to Starburst: A Multi-wavelength Synergy," Guiyang, China, August 2019.
50. "Feedback and its role in Galaxy Formation," Spetses, Greece, June 2019.
49. "What matter(s) between galaxies: unraveling the knots in the Cosmic Web," Spineto, Italy, June 2019.
48. "The Co-Evolution of Galaxies and Their Central Regions," Dali, China, November 2018.
47. "2018 Thinkshop on the role of feedback in galaxy formation: from small-scale winds to large-scale outflows," Potsdam, Germany, September 2018.
46. "Circum-galactic Medium Worskhop," Northwestern University July 2018.
45. "Multiphase AGN Feeding & Feedback," Sexten, Italy, July 2018.
44. "Computational Galaxy Formation," Ringberg Castle, Germany, March 2018.
43. "Roaming Baryons," Sexten, Italy, July 2017.
42. "What Matters Around Galaxies," Durham University, UK, June 2017.
41. "Workshop on AGN Outflows," Technion, Israel, May 2017.
40. "2017 STScI Spring Symposium: the Lifecycle of Metals Throughout the Universe," Baltimore, April 2017.
39. "Massive Beasts of the Cosmos" conference on massive galaxies, Kruger Park, South Africa, July 2016.
38. "Banff International Research Station for Mathematical Innovation and Discovery workshop on stellar and AGN processes in galaxy evolution," Oaxaca, Mexico, June 2016.
37. "Oort workshop on galaxy feedback," Leiden, Netherlands, June 2016.
36. "2016 Meeting of the High-Energy Astrophysics Division of the American Astronomical Society," Naples, March 2016.
35. "Sweeping Galaxies Clean: Cold Molecular Outflows as Drivers of Galaxy Evolution," Sexten, Italy, February 2016.
34. "The Physics of Supermassive Black Hole Formation and Feedback," Annapolis, October 2015.
33. "The Physics of Accretion and Feedback in the Circum-Galactic Medium," Aspen, July 2015.
32. "IGM@50: Is the Intergalactic Medium Driving Star Formation?," Spineto, Italy, June 2015.
31. "Black Hole Accretion and AGN Feedback conference," Shanghai, China, June 2015.
30. "XXVI IUPAP Conference on Computational Physics," Boston, August 2014.

29. "Gas In and Around Galaxies," Ringberg Castle, Germany May 2014.
28. "Computational Research Day", Northwestern University, April 2014.
27. "KITP Conference on Star Formation: Fire Down Below," Santa Barbara, April 2014.
26. "CGM@ND: The Impact of Gas Fueling, Quenching, and Feedback on the Growth of Galaxies," University of Notre Dame, February 2014.
25. "Einstein Fellows Symposium," Cambridge, MA, October 2013.
24. "Outflows @ UCSB," UC Santa Barbara, August 2013.
23. "The Dynamic Nature of Baryons in Halos," Lorentz Center for Physics, Netherlands, August 2012.
22. "Santa Cruz Workshop on Galaxy Formation," UC Santa Cruz, August 2011.
21. "The Future of AstroComputing Conference," San Diego Supercomputing Center, December 2010.
20. "Cosmological Reionization Conference," Harish-Chandra Research Institute, India, February 2010.
19. "Napa Galaxy Assembly Workshop 2009," Napa, February 2009.

Contributed conference talks

18. *The Cosmic Baryon Cycle and Galaxy Halos in the FIRE Cosmological Simulations*, On the Origin (and Evolution) of Baryonic Galaxy Halos, Galapagos Islands, March 2017.
17. *The Galaxy-Circumgalactic Medium Life Cycle in the FIRE Simulations*, The Galaxy Life Cycle, Venice, October 2016.
16. *The Physics and Observational Signatures of Black Hole-Driven Galactic Winds*, Powerful AGN Across Cosmic Time, Port Douglas, June 2014.
15. *Feedback-Regulated Star Formation*, Physical Processes of Galaxy Formation: Consensus and Challenges, Aix-en-Provence, July 2013.
14. *Feedback-Regulated Star Formation*, Mind the Gap: From Microphysics to Large-Scale Structure in the Universe, Cambridge University, July 2013.
13. *The Physics of Galactic Winds Driven by AGN*, Black Hole Feedback 2012, Dartmouth College, July 2012.
12. *The Physics of Galactic Winds Driven by AGN*, UV Astronomy: HST and Beyond, Kaua'i, June 2012.
11. *The Physics of Galactic Winds Driven by AGN*, Center for Galaxy Evolution Baryon Cycle Workshop, Irvine, June 2012.
10. *Modeling Galaxy-Scale AGN Outflows: Implications for Feedback and Driving*, ALMA/ NAASC 2012 Workshop: Outflows, Winds and Jets, Charlottesville, March 2012.
9. *Modeling AGN Outflows: Implications for Feedback Efficiency*, AGN Winds in Charleston, Charleston, October 2011.
8. *Modeling AGN Outflows: Implications for Feedback Efficiency*, Through the Infrared Looking Glass: A Dusty View of Galaxy and AGN Evolution, Pasadena, October 2011.

7. *Probing the Accretion of Gas onto Galaxies: Opportunities and Pitfalls*, VIIIth Marseille International Cosmology Conference, Marseille, June 2011.
6. *Probing the Accretion of Gas onto Galaxies: Opportunities and Pitfalls*, AAS Dissertation Talk, Boston, May 2011.
5. *Modeling the Signatures of Galaxy Assembly*, Essential Cosmology for the Next Generation 2011, January 2011.
4. *A New Calculation of the Ionizing Background Spectrum: Prescriptions for Simulations*, NOVICOSMO Workshop on Numerical Simulations in Cosmology and Galaxy Formation, October 2008.
3. *Evolution of the IGM Opacity: Implications for the Ionizing Background, Cosmic Star Formation, and Quasar Activity*, CASCA Annual Meeting, May 2008.
2. *Evolution of the IGM Opacity: Implications for the Ionizing Background, Cosmic Star Formation, and Quasar Activity*, 4th UC Irvine Center for Cosmology Workshop: Galaxy Formation as Seen Through Cosmic Gas, April 2008.
1. *Evolution of the IGM at* $2 \leq z \leq 4.2$*: Implications for Cosmic Star Formation and Quasar Activity*, 1st Subaru International Conference: Panoramic Views of Galaxy Formation and Evolution, December 2007.

Posters

4. *A Direct Precision Measurement of the Intergalactic Lyman-*α *Opacity at* $2 \leq z \leq 4.2$ (with J. X. Prochaska, A. Lidz, L. Hernquist, & M. Zaldarriaga), "A Century of Cosmology," Venice, August 2007.
3. *Birth and Evolution of Isolated Radio Pulsars* (with V. M. Kaspi), "40 Years of Pulsars," Montréal, August 2007.
2. *Measuring the Mass of Quasar Host Halos with the Lyman-*α *forest* (with A. Lidz, M. Zaldarriaga, & L. Hernquist), Texas Symposium on Relativistic Astrophysics 2006, Melbourne, December 2006.
1. *Monte Carlo Simulations of the Galactic Population of Radio Pulsars* (with V. M. Kaspi), CASCA Annual Meeting, Montréal, May 2005.

Education and outreach talks

8. *Cosmology from an Astrophysicist's Point of View*, Freshman Seminar on Cosmology, Northwestern University, January 2019.
7. *The Universe on a computer: Understanding the origin of galaxies*, STEM outreach for Bad River Ojibwe girls, Northwestern University, September 2018.
6. *Gravity, Feedback, and Self-Regulation in Galaxy Formation*, REU Lunch Talk, Northwestern University, June 2016.
5. *Bringing Galaxy Research to K-12*, STEM Summit, Northwestern University, November 2014.
4. *From the Big Bang to Stars, Galaxies, and Black Holes*, Astronomy Lectures Series, City College of San Francisco, September 2011.
3. *Geometry of the Universe with Cosmic Radiation*, Canadian Undergraduate Mathematics Conference, July 2006.

2. *Algebraic Topology and the Fundamental Group*, Canadian Undergraduate Mathematics Conference, July 2005.
1. *Monte Carlo Simulations of Radio Pulsars*, Canadian Undergraduate Mathematics Conference, June 2004.

Teaching

Instruction at Northwestern University:

· Astron 449: *Stellar Dynamics*, Winter 2019.
· Astron 329/429: *Cosmology and Extragalactic Astrophysics*, Fall 2017.
· Astron 331: *Astrophysics*, Spring 2017.
· Astron 449: *Stellar Dynamics*, Winter 2017.
· Astron 331: *Astrophysics*, Spring 2016.
· Astron 329/429: *Cosmology and Extragalactic Astrophysics*, Fall 2015
· Astron 449: *Stellar Dynamics*, Fall 2014.

Teaching Fellow at Harvard University:

· Ay 151: *Astrophysical Fluid Dynamics*, Spring 2008.
· Ay 150: *Radiative Processes in Astrophysics*, Fall 2007.
  - Received *Certificate of Distinction in Teaching* for this course.
· Ay 145: *Topics in Astrophysics*, Spring 2007
· Ay 150: *Radiative Processes in Astrophysics*, Fall 2006.
  - Received *Certificate of Distinction in Teaching* for this course.

Mentoring

Postdocs:

· Dr. Luke Zoltan Kelley (Lindheimer Fellow), Northwestern University (2018-).
· Dr. Sarah Wellons (CIERA Fellow), Northwestern University (2017-).
· Dr. Jonathan Stern (CIERA Fellow), Northwestern University (2017-).
· Dr. Cliff Johnson (CIERA Fellow), Northwestern University (2017-).
· Dr. Alexander Richings (Lindheimer Fellow) (2016-2018).
· Dr. Daniel Anglés-Alcázar (CIERA Fellow), Northwestern University (2014-2017).

Ph.D. students:

· Lindsey Byrne, Northwestern University (2018-).
· Alexander Gurvich, Northwestern University (2016-).
· Zachary Hafen, Northwestern University (2014-).
· Niharika Sravan, Northwestern University (2013-2015).

Undergraduate students:

· Mahlet Shiferaw, REU student (2018).
· Megan Tillman, REU student (2018).
· José Flores, REU student (2017).

· Luolei Zhao, Northwestern University (2016-2017).
· Yulun Wu, Northwestern University (2014-2015).
· Shyam Bharadwaj, Northwestern University (2014-2015).

High-school students:

· Nora Linzer, Evanston Township High School (2016).

Ph.D. thesis committees:

· External examiner for Xiawei Wang, Harvard University (2019).
· Miaotianzi Jin, Northwestern University (2016-).
· Cody Dirks, Northwestern University (2015-).
· Peter Ashton, Northwestern University (2015-2018).

University Service

At Northwestern University:

· Member, Limited Submissions committee (2018-).
· Chair, CIERA postdoc selection committee (2017-).
· Member, CIERA postdoc selection committee (2013-2017).
· Designed and successfully proposed new Astronomy Ph.D. program (2015-2016).
· Member, Physics & Astronomy space committee (2016-2017).
· Member, Physics & Astronomy faculty search committee (2015-2016).
· Member, Physics & Astronomy graduate curriculum committee (2015-2018).
· Member, Physics & Astronomy computer committee (2015-2016).
· Member, Physics & Astronomy colloquium committee (2014-2015).
· Member, Physics & Astronomy graduate admissions committee (2013-2015).
· Chair, CIERA astrophysics seminars committee (2013-2016).

At UC Berkeley:

· Organizer, Theoretical Astrophysics Center seminars (2011-2013).

Conference Organizing

· Co-chair, scientific organizing committee, "Physics of the Low-redshift Circumgalactic Medium" workshop, Northwestern University (2017-2018).
· Member, scientific organizing committee, "Fellows at the Frontiers 2016" CIERA conference, Northwestern University (2015-2016).
· Member, scientific organizing committee, international conference on "Black Hole Accretion and AGN Feedback," Shanghai, China (2014-2015).
· Member, scientific organizing committee, Miller Interdisciplinary Symposium, Tomales Bay, CA (2013).

Refereeing

Journals: The Astrophysical Journal, The Astrophysical Journal Letters, The Astronomical Journal, Monthly Notices of the Royal Astronomical Society, Astronomy &

Astrophysics, Nature, and Computational Astrophysics and Cosmology.

Grant programs: The National Science Foundation, NASA, the Chandra X-ray Observatory, the Hubble Space Telescope, the Research Corporation for Science Advancement, the Fonds de Recherche du Québec Nature & Technologies (Canada), the European Research Council, the French National Research Agency, the Swiss National Science Foundation, the Netherlands Organisation for Scientific Research, the UK Science & Technology Facilities Council, the Israel Science Foundation, the German-Israel Foundation for Scientific Research and Development, Durham University (UK), and Scuola Normale Superiore (Italy).