

Paul A. Torrey

Curriculum Vitae

Massachusetts Institute of Technology
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Education

Harvard University Center for Astrophysics Cambridge, MA
MA in Astronomy & Astrophysics 2010
Ph.D. in Astronomy & Astrophysics 2014
Advisor: Lars Hernquist
Thesis: *Probing Galaxy Formation and Evolution through Numerical Simulations and the Distribution of Heavy Elements*

Cornell University College of Engineering Ithaca, NY
Bachelor of Science in Applied Physics – Cum Laude 2008

Professional Experience

Hubble Fellow	MIT	2016 –
Postdoctoral Fellow	MIT (joint w/ Caltech) with Mark Vogelsberger	2014 –
Postdoctoral Fellow	Caltech (joint w/ MIT) with Phil Hopkins	2014 –
Graduate Student	Harvard University with Lars Hernquist	2008 – 2014
Undergrad Researcher	Cornell University with Joe Burns	2007 – 2008
Space Grant Intern	JPL with Lee Johnson	2007
Mechanical Engineer	CUSat Air Force Research Lab Competition	2006 – 2007

Honors and Awards

Hubble Fellowship	2016
Eric R. Keto Prize for Ph.D. thesis in theoretical astrophysics at Harvard	2014
Bok Center “Excellence in Teaching” Award (2 times)	2010 & 2011
Prize Fellowship – Harvard University	2008
Carrier Scholarship – Cornell University	2004

Mentoring and Advising

I have served as a primary science adviser to the following students:

Ryan McKinnon — MIT Ph.D. student 2014 —
Project: *Dust production and destruction in galaxy formation models*

Sarah Wellons — Harvard Ph.D. student 2014 — 2017
Project: *The formation and evolution of massive, compact, high-redshift galaxies*

Stephen Chen — MIT undergraduate 2015 — 2017
Project: *A physical model for the origin and fate of MgII absorbers*

Renato Guimaraes — MIT Summer Student 2015
Project: *Comparative analysis of real and mock HUDF galaxy properties*

Francisco Machado — MIT undergraduate 2014 – 2015
Project: *The impact of galaxy mergers on galaxy number density evolution*

I have served on the Ph.D. Thesis Defense Committee of the following students:

Bret Clauwens — Leiden Observatory 2017

Proposals and Grants

PI allocations

PI on XSEDE Computing Grant (Award: 120k Node Hours; \$33,292 value)	2017
PI on NASA HEC Computing Grant (Award: 1.1M CPU hours; \$31,728 value)	2016
PI on XSEDE Computing Grant (Award: 894k CPU hours; \$30,994 value)	2015

Co-I allocations

Co-I on NASA HST Cycle 25 Theory Grant (Award: \$120,000) <i>Understanding Galaxy Shapes Across Cosmic Time Using The IllustrisTNG Simulation</i>	2017
Co-I on NASA HST Cycle 25 GO program (Award: 6 orbits) <i>Low redshift Lyman-alpha blobs</i>	2017
Co-I on NASA HST Cycle 24 Theory Grant (Award: \$120,000) <i>Combining Statistical Samples of Resolved-ISM Simulated Galaxies with Realistic Mock Observations to Fully Interpret HST and JWST Surveys</i>	2016
Co-I on NASA HST Cycle 24 GO program (Award: 6 orbits) <i>Low redshift Lyman-alpha blobs</i>	2016
Co-I on NSF RUI Grant (Award: \$260,000) <i>Galaxy Encounters on FIRE: Decoding Interaction Induced Star Formation</i>	2015
Co-I on ALMA Cycle 3 (Award: 12 hours) <i>Arp 220 Nuclear Disks at 50 mas Resolution</i>	2015
Co-I on NASA HST Cycle 22 Theory Grant (Award: \$120,000) <i>Observing the Origins of Galaxy Structure in the Illustris Simulation</i>	2014
Co-I on NASA HST Cycle 22 Theory Grant (Award: \$120,000) <i>Clusters of Galaxies in the last 5 Billion Years: from the Brightest Cluster Galaxy to the Intra-Cluster Light</i>	2014
Co-I on NOAO Gemini Proposal (Award: 16 hours on Gemini) <i>Unveiling the Young Central Stellar Disk in Arp 193</i>	2012

Invited Talks and Seminars

Invited Review Talk — Lorentz Center — Quenching of Massive Galaxies	Nov 2017
Colloquium — University of Florida	Oct 2017
Invited Conference Talk — GMT Science Meeting	Sept 2017
Colloquium — University of Maryland	March 2017
Colloquium — University of Virginia	Feb 2017
Colloquium — Queen's University	Nov 2016
Seminar — Monash University	Oct 2016
Seminar — Swinburne University	Oct 2016
Seminar — University of Western Australia/ICRAR	Sept 2016
Invited Conference Talk — The Changing Face of Galaxies	Sept 2016
Invited Conference Talk — Computing the Universe	June 2016
Seminar — CU Pomona	May 2016
Invited Conference Talk — Local and Global Processes in Galaxies	April 2016
McGill — Colloquium	Feb 2016
University of Montreal — Colloquium	Feb 2016
University of Montreal — Seminar	Feb 2016
CUPC — Invited Speaker	Oct 2015
IMPS Seminar — UC Santa Cruz	April 2015
Seminar — Fermi National Lab	March 2015

Cosmology Seminar — Institute for Advanced Study	Oct 2014
Colloquium – Univ. of Hawaii	Oct 2013
TAC Seminar – Berkeley	Nov 2013
Extra-galactic Seminar – Herzberg Institute for Astrophysics	April 2013
Physics and Astro. Seminar – Univ. of Victoria	April 2013
Invited Conference Talk – Metals in an Evolving Universe	June 2012

Contributed Talks and Presentations

Annual Hubble Symposium	March 2017
Contributed Conference Talk — STScI Spring Symposium	April 2016
3DHST Data Release Conference — Yale	Nov 2015
MKI Visiting Committee — MIT	April 2015
Journal Club Presentation — Northwestern	March 2015
Contributed Conference Talk — AGN Conference in Chile	March 2015
Contributed Workshop Talk — AGN Ionization Echoes	March 2014
Galaxy Lunch Seminar — Cornell University	May 2014
GalRead — Princeton University	Jan 2014
Tea Talk — Caltech	Oct 2013
Lunch Seminar — MIT	Nov 2013
Contributed Conference Talk — First Annual AREPO Users Workshop	Sept 2013
Contributed Conference Talk — Feedback, Feeding, and Fireworks	June 2013
Contributed Conference Talk — Mergers in an Evolving Universe	Oct 2011
Extra-galactic Discussion Group — Univ. of Hawaii	March 2011
Astronomy Seminar — Australian National University	Sept 2011

Teaching

Discussion Leader and Guest Lecturer — MIT Course: 8.02 “ <i>Introductory Electricity and Magnetism</i> ”	Spring 2017
Guest Lecturer — MIT Course: 8.03 “ <i>Waves and Vibrations</i> ”	Spring 2017
Guest Lecturer — Harvard Extension School Course: “ <i>Stars and Galaxies</i> ”	Fall 2015
Guest Lecturer — MIT Course: 8.902 “ <i>Astrophysics II</i> ”	Fall 2015
Head Teaching Fellow (135 Students; 5 Staff) - Harvard University Course: “ <i>The Energetic Universe</i> ”	Fall 2011
Teaching Fellow — Harvard University Course: “ <i>The Energetic Universe</i> ”	Fall 2010

Service

Cambridge Science Festival Public Talk	2017
MIT Independent Activities Period Astrophysics Organizer	2017
NSERC External Funding Reviewer	2017
PRACE Proposal Reviewer	2017
NASA ATP Funding Panel	2016
MIT Postdoc Symposium Organizer	2016
MIT Open House Speaker	2016
MIT Astrophysics Seminar Organizer	2015 —
Science Judge — CUPC Astrophysics Category	2015

Science by the Pint — Featured Speaker (public outreach event)	2015
Main Street Partners — Consultant (advise small businesses on best practices)	2014 — 2015
Mentor — Harvard Graduate Student Mentoring Program	2013 — 2014
Graduate Admissions Committee — Harvard Astronomy Department	2014

Funding Panelist/Reviewer for:

NSF	2017
PRACE	2017
NSERC	2017
NASA ATP	2016

Referee for:

<i>Nature Astronomy</i>	2017 — Present
<i>MNRAS</i>	2012 — Present
<i>ApJ</i>	2015 — Present
<i>ApJ Letters</i>	2015 — Present

Professional Training

XSEDE Intel Xeon Phi Training	Nov 2014
Saas Fee Winter School	March 2013
Santa Cruz Computational Galaxy Formation Workshop	July 2012

Press

“The Story of God” — National Geographic filmed interview with Morgan Freeman
Air date: Spring 2016 (Content was sadly cut)

“Virtual Universe” — ABC filmed interview with Graham Phillips
Air date: Oct. 2015 (<http://www.abc.net.au/catalyst/stories/4107265.htm>)

“Seeing the Universe form before your eyes” — Interview with LA Times
Print date: May 2014 (<http://www.latimes.com/science/sciencenow/la-sci-sn-illustris-universe-model-20140506-story.html>)

“Galaxies out of a Supercomputer” — Press Release
Release date: May 2014 (h-its.org/scientific-news/in-nature-galaxies-out-of-a-supercomputer/)

“Recreating a Slice of the Universe” — Press Release
Release date: Aug. 2012 (<http://www.cfa.harvard.edu/news/2012/pr201223.html>)

Publications

First Author Papers

1. “*The Metallicity Evolution of Interacting Galaxies*”
Torrey, Cox, Kewley, & Hernquist, *ApJ.*, 746, 102, 2012
2. “*Moving Mesh Cosmology: The properties of gas disks*”
Torrey, Vogelsberger, Sijacki, Springel, & Hernquist, *MNRAS.*, 427, 2224, 2012
3. “*A physical model for cosmological simulations of galaxy formation: multi-epoch model validation*”
Torrey, Vogelsberger, Genel, Sijacki, Springel, & Hernquist, *MNRAS.*, 438, 1985, 2014
4. “*The Illustris Simulation Observatory: A Catalog of Mock Galaxy Images and Spectra*”
Torrey, Snyder, Vogelsberger, Hayward, Genel, Sijacki, Springel, Hernquist, Nelson, Kriek, Pillepich, Sales, McBride, *MNRAS*, 447, 2753, 2015
5. “*An analysis of the evolving comoving number density of galaxies in hydrodynamical simulations*”
Torrey, Wellons, Machado, Griffen, Nelson, Rodriguez-Gomez, McKinnon, Pillepich, Ma, Vogelsberger, Springel, & Hernquist, *MNRAS*, 454, 2770, 2015
6. “*An instability of feedback regulated star formation in galactic nuclei*”
Torrey, Hopkins, Faucher-Giguere, Vogelsberger, Quataert, Keres, & Murray, *MNRAS*, 467, 2301, 2017
7. “*Forward and Backward galaxy evolution in comoving number density space*”
Torrey, Wellons, Ma, Hopkins, & Vogelsberger, *MNRAS*, 467, 4872, 2017
8. “*The evolution of the Mass-Metallicity relation in IllustrisTNG*”
Torrey, Vogelsberger, Weinberger, Springel, Pakmor, Nelson, Genel, Pillepich, Marinacci, Naiman, & Hernquist, 2017, *MNRAS* submitted (arXiv 1711.05261)
9. “*Similar evolution timescales for star formation rates and metallicity drive the fundamental metallicity relation*”
Torrey, Vogelsberger, Weinberger, Springel, Pakmor, Nelson, Genel, Pillepich, Marinacci, Naiman, & Hernquist, 2017, *MNRAS* submitted
10. “*Similar evolution timescales for star formation rates and metallicity drive the fundamental metallicity relation*”
Torrey, Faucher-Giguere, Hopkins, Quataert, Vogelsberger, Ma, Angles-Alcazar, Feldman, Keres, & Murray, (in prep)

Second Author Papers Led by Students

11. “*The formation of massive, compact galaxies at $z = 2$ in the Illustris simulation*”
Wellons, Torrey, Ma, Rodriguez-Gomez, Vogelsberger, Kriek, van Dokkum, Nelson, Genel, Pillepich, Springel, Sijacki, Snyder, Nelson, Sales, & Hernquist, *MNRAS*, 449, 361, 2015
12. “*Dust Formation in Milky Way-like Galaxies*”
McKinnon, Torrey, & Vogelsberger, *MNRAS*, 457, 3775, 2016
13. “*The diverse evolutionary paths of simulated high- z massive, compact galaxies to $z = 0$* ”
Wellons, Torrey, Ma, Rodriguez-Gomez, Pillepich, Nelson, Genel, Vogelsberger, & Hernquist, *MNRAS*, 456, 1030, 2016
14. “*An improved probabilistic approach for linking progenitor and descendant galaxy populations using comoving number density*”
Wellons & Torrey, *MNRAS*, 467, 3887, 2017
15. “*Simulating the dust content of galaxies: successes and failures*”
McKinnon, Torrey, Vogelsberger, Hayward, & Marinacci, *MNRAS*, 468, 1505, 2017
16. “*Galaxies in the Illustris simulation as seen by the Sloan Digital Sky Survey - I: Bulge+disc decompositions, methods, and biases*”
Bottrell, Torrey, Simard, & Ellison, *MNRAS*, 467, 1033, 2017

17. “Galaxies in the Illustris simulation as seen by the Sloan Digital Sky Survey - II: Size-luminosity relations and the deficit of bulge-dominated galaxies in Illustris at low mass”
Bottrell, **Torrey**, Simard, & Ellison, MNRAS, 467, 2879, 2017

Other Second Author Papers

18. “An Integral Field Study of Abundance Gradients in nearby Luminous Infrared Galaxies”
Rich, **Torrey**, Kewley, Dopita, & Rupke, ApJ., 753, 5, 2012
19. “Galaxy pairs in the Sloan Digital Sky Survey – VI. The orbital extent of enhanced star formation in interacting galaxies”
Patton, **Torrey**, Ellison, Mendel, & Scudder, MNRAS., 433, L59, 2013
20. “The Slow Flow Model of Dust Efflux in Local Star-Forming Galaxies”
Zahid, **Torrey**, Kudritzki, Kewley, Dave, & Geller, MNRAS., 436, 1852, 2013
21. “Empirical Constraints for the Magnitude and Composition of Galactic Winds”
Zahid, **Torrey**, Vogelsberger, Hernquist, Kewley, & Dave, Ap&SS, 349, 873, 2013
22. “Galaxy mergers on a moving mesh: a comparison with smoothed-particle hydrodynamics”
Hayward, **Torrey**, Springel, Hernquist, & Vogelsberger, MNRAS., 422, 1992, 2014
23. “Mapping star formation in simulated galaxy encounters: Are interaction-induced starbursts nuclear or extended?”
Moreno, **Torrey**, Ellison, Patton, Bluck, Bansal, & Hernquist, MNRAS, 448, 1107, 2015
24. “On the Cosmic Evolution of Mg/Fe in QSO Absorption Line Systems”
Dey, **Torrey**, Rubin, Zhu, Menard, & Suresh, MNRAS, 451, 2806, 2015
25. “Illustris Simulation Observatory II: Non-Parametric Galaxy Morphology at $z=0$ ”
Snyder, **Torrey**, Lotz, Genel, McBride, Vogelsberger, Xu, Pillepich, Nelson, Sijacki, Hernquist, & Springel, MNRAS, 454, 1886, 2015
26. “Stellar & Quasar Feedback in Concert: Effects on AGN Accretion, Obscuration, and Outflows”
Hopkins, **Torrey**, Faucher-Giguere, Quataert, & Murray, MNRAS, 458, 816, 2016

Co-Authored Papers

27. “Galaxy pairs in the Sloan Digital Sky Survey – VI. The orbital extent of enhanced star formation in interacting galaxies”
Scudder, Ellison, **Torrey**, Patton, & Mendel, MNRAS., 426, 549, 2012
28. “A physical model for cosmological simulations of galaxy formation”
Vogelsberger, Genel, Sijacki, **Torrey**, Springel, & Hernquist, MNRAS., 436, 3031, 2013
29. “The Dynamics of Galaxy Pairs in a Cosmological Setting”
Moreno, Bluck, Ellison, Patton, **Torrey**, & Moster, MNRAS., 436, 1765, 2013
30. “Properties of galaxies reproduced by hydrodynamic simulations”
Vogelsberger, Genel, Springel, **Torrey**, Sijacki, Xu, Snyder, Bird, Nelson & Hernquist, Nature., 507, 177, 2014
31. “Halo assembly exposed in the faint outskirts: the stellar and dark matter haloes of Illustris galaxies”
Pillepich, Vogelsberger, Deason, Rodriguez-Gomez, Genel, Nelson, **Torrey**, Sales, Marinacci, Springel, Sijacki, & Hernquist, MNRAS, 444, 237, 2014
32. “Introducing the Illustris Project: Simulating the coevolution of dark and visible matter in the Universe”
Vogelsberger, Genel, Springel, **Torrey**, Sijacki, Xu, Snyder, Bird, Nelson & Hernquist, MNRAS, 444, 1518, 2014
33. “The Illustris Simulation: the evolution of galaxy populations across cosmic time”

- Genel, Voglesberger, Springel, Sijacki, Nelson, Snyder, Rodriguez-Gomez, **Torrey**, & Hernquist, MNRAS, 445, 175, 2014
34. “*Damped Lyman-alpha absorbers as a probe of feedback on a moving mesh*”
Bird, Vogelsberger, Haehnelt, Springel, Hernquist, **Torrey**, & Sijacki, MNRAS, 445, 2313, 2014
35. “*The colors of satellite galaxies in the Illustris Simulation*”
Sales, Vogelsberger, Genel, **Torrey**, Nelson, Rodriguez-Gomez, Wang, Pillepich, Sijacki, Springel, & Hernquist, MNRAS, 447, L6, 2015
36. “*Star-forming galaxies and the star formation main sequence in the Illustris simulation*”
Sparre, Hayward, Springel, Vogelsberger, Genel, **Torrey**, Nelson, Sijacki, & Hernquist, MNRAS, 447, 3548, 2015
37. “*The neutral gas content of post-merger galaxies: implications for the role of gas in modulating star formation rates*”
Ellison, Fertig, Rosenberg, Nair, Simard, **Torrey**, & Patton, MNRAS, 448, 221, 2015
38. “*The Role of Galactic Outflows in the circumgalactic Medium*”
Suresh, Bird, Vogelsberger, Genel, **Torrey**, Sijacki, Springel, & Hernquist, MNRAS, 448, 895, 2015
39. “*The merger rate of galaxies in the Illustris Simulation: a comparison with observations and semi-empirical models*”
Rodriguez-Gomez, Genel, Vogelsberger, Sijacki, Pillepich, Sales, **Torrey**, Snyder, Nelson, Springel, Ma, Hernquist, MNRAS, 449, 49, 2015
40. “*The impact of feedback on cosmological gas accretion*”
Nelson, Genel, Vogelsberger, Springel, Sijacki, **Torrey**, & Hernquist, MNRAS, 448, 59, 2015
41. “*Galaxy Pairs in the Sloan Digital Sky Survey – X: Does gas content drive star formation rate enhancement in galaxy pairs?*”
Scudder, Ellison, Momjian, Rosenberg, **Torrey**, Fertig, Patton, & Mendel, MNRAS, 449, 3719, 2015
42. “*Hot Gaseous Coronae around Spiral Galaxies: Probing the Illustris Simulation*”
Bogdan, Vogelsberger, Kraft, Hernquist, Gilfanov, **Torrey**, Churazov, Genel, Forman, Murray, Vikhlinin, Jones, & Boehringer, ApJ, 804, 72, 2015
43. “*The Illustris simulation: Evolving population of black holes across cosmic time*”
Sijacki, Vogelsberger, Genel, Springel, **Torrey**, Snyder, Nelson, & Hernquist, MNRAS, 452, 575, 2015
44. “*The Illustris Simulation: Public Data Release*”
Nelson, Pillepich, Genel, Vogelsberger, Springel, **Torrey**, Rodriguez-Gomez, Sijacki, Snyder, Griffen, Marinacci, Blecha, Sales, Xu, & Hernquist, A&C, 13, 12, 2015
45. “*Hydrogen Reionization in the Illustris Universe*”
Bauer, Springel, Vogelsberger, Genel, **Torrey**, Sijacki, Nelson, & Hernquist, MNRAS, 453, 3593, 2015
46. “*The Incidence of Low-Metallicity Lyman-Limit Systems at $Z=3.5$: Implications for the Cold-Flow Hypothesis of Baryonic Accretion*”
Cooper, Simcoe, Cooksey, O’Meara, & **Torrey**, ApJ, 812, 58, 2015
47. “*Large-Scale Mass Distribution in the Illustris Simulation*”
Haider, Steinhauser, Vogelsberger, Genel, Springel, **Torrey**, & Hernquist, MNRAS, 457, 3024, 2016
48. “*Recoiling black holes: prospects for detection and implications of spin alignment*”
Blecha, Sijacki, Kelley, **Torrey**, Vogelsberger, Nelson, Genel, Springel, Snyder, & Hernquist, MNRAS, 456, 961, 2016
49. “*Modelling galactic conformity with the colour-halo age relation in the Illustris simulation*”
Bray, Pillepich, Sales, Zhu, Genel, Rodriguez-Gomez, **Torrey**, Nelson, Vogelsberger, Springel, Eisenstein, & Hernquist, MNRAS, 455, 185, 2016
50. “*On the assembly of dwarf galaxies in clusters and their efficient formation of globular clusters*”

- Mistani, Sales, Pillepich, Sanchez-Janssen, Vogelsberger, Genel, Nelson, Rodriguez-Gomez, Sijacki, **Torrey**, Springel, & Hernquist, MNRAS, 455, 2323, 2016
51. “*The mass profile of the Milky Way to the virial radius from the Illustris simulation*”
Taylor, Boylan-Kolchin, **Torrey**, Vogelsberger, & Hernquist, MNRAS, 461, 3483, 2016
 52. “*Galaxy Pairs in the Sloan Digital Sky Survey XIV. - The Influence of the Closest Companion*”
Patton, Qamar, Ellison, Bluck, Simard, Mendel, Moreno, & **Torrey**, MNRAS, 461, 2589, 2016
 53. “*The stellar mass assembly of galaxies in the Illustris simulation: growth by mergers and the spatial distribution of accreted stars*”
Rodriguez-Gomez, Pillepich, Sales, Genel, Vogelsberger, Zhu, Wellons, Nelson, **Torrey**, Springel, & Hernquist, MNRAS, 458, 2371, 2016
 54. “*The role of mergers and halo spin in shaping galaxy morphology*”
Rodriguez-Gomez, Sales, Genel, Pillepich, Griffen, **Torrey**, Snyder, Nelson, Springel, Ma, & Hernquist, MNRAS, 467, 3083, 2017
 55. “*The impact of galactic properties and environment on the quenching of central and satellite galaxies at fixed central velocity dispersion*”
Bluck, Mendel, Ellison, Patton, Simard, Henriques, Torrey, Teimoorinia, Moreno, & Starkenburg, MNRAS, 462, 2559, 2016
 56. “*The Missing Satellite Problem in 3D*”
Nierenberg, Treu, Menci, Lu, **Torrey**, & Vogelsberger, MNRAS, 462, 4473, 2016
 57. “*The CALIFA and HIPASS circular velocity function for all morphological galaxy types*”
Bekeraite, Walcher, Wisotzki, Croton, Falco n-Barroso, Lyubenova, Obreschkow, Sanchez, Spekkens, van de Ven, Zwaan, Ascasibar, Bland-Hawthorn, Gonzalez Delgado, Husemann, Marino & **Torrey**, ApJ, 827, 36, 2016
 58. “*Why do high-redshift galaxies show diverse gas-phase metallicity gradients?*”
Ma, Hopkins, Feldmann, **Torrey**, Faucher-Giguere, Keres, & Quataert, MNRAS, 466, 4780, 2017
 59. “*About AGN ionization echoes, thermal echoes and ionization deficits in low-redshift Ly α blobs*”
Schirmer, Malhotra, Levenson, Fu, Davies, Keel, **Torrey**, Bennert, Pancoast, & Turner, MNRAS, 463, 1554, 2016
 60. “*Massive Close Pairs Measure Rapid Galaxy Assembly in Mergers at High Redshift*”
Snyder, Lotz, Rodriguez-Gomez, da Silva Guimaraes, **Torrey**, Hernquist, MNRAS, 468, 207, 2017
 61. “*The role of mergers and halo spin in shaping galaxy morphology*”
Rodriguez-Gomez, Sales, Genel, Pillepich, Zjupa, Nelson, Griffen, **Torrey**, Snyder, Vogelsberger, Springel, Ma, & Hernquist, MNRAS, 467, 2083, 2017
 62. “*Simulating galaxy formation with black hole driven thermal and kinetic feedback*”
Weinberger, Springel, Hernquist, Pillepich, Marinacci, Pakmor, Nelson, Genel, Vogelsberger, Naiman, & **Torrey** MNRAS, 465, 3291, 2017
 63. “*Metal flows of the circumgalactic medium, and the metal budget in galactic halos*”
Muratov, Keres, Faucher-Giguere, Hopkins, Ma, Angles-Alcazar, Chan, **Torrey**, Hafen, Quataert, & Murray MNRAS, 468, 4170, 2017
 64. “*FIRE-2 Simulations: Physics versus Numerics in Galaxy Formation*”
Hopkins et al., (25 coauthors, including Torrey), MNRAS (submitted arXiv:1702:06148)
 65. “*Log-normal star formation histories in simulated and observed galaxies*”
Diemer, Sparre, Abramson, & **Torrey** ApJ, 839, 26, 2017
 66. “*Simulating Galaxy Formation with the IllustrisTNG Model*”
Pillepich, Springel, Nelson, Genel, Naiman, Pakmor, Hernquist, **Torrey**, Vogelsberger, Weinberger, & Marinacci, MNRAS, (submitted, arXiv:1703:02970)

67. *“MgII Absorption at $2 < z < 7$ with Magellan/FIRE, III. Full Statistics of Absorption Towards 100 High-Redshift QSOs”*
Chen, Simcoe, **Torrey**, Bañados, Cooksey, Cooper, Furesz, Matejek, Miller, Turner, Venemans, Decarli, Farina, Mazzucchelli & Walter ApJ, (submitted, arXiv:1612.02829)
68. *“Black Holes on FIRE: Stellar Feedback Limits Early Feeding of Galactic Nuclei”*
Angles-Alcazar, Faucher-Giguere, Quataert, Hopkins, Feldmann, **Torrey**, Wetzel, & Keres, MNRAS, submitted (arxiv:1707.03832)
69. *First results from the IllustrisTNG simulations: the stellar mass content of groups and clusters of galaxies*
Pillepich, Nelson, Hernquist, Springel, Pakmor, **Torrey**, Weinberger, Genel, Naiman, Marinacci, & Vogelsberger, MNRAS (submitted, arxiv:1707.03406)
70. *First results from the IllustrisTNG simulations: the galaxy color bimodality*
Nelson, Pillepich, Springel, Weinberger, Hernquist, Pakmor, Genel, **Torrey**, Vogelsberger, Kauffmann, Marinacci, & Naiman, MNRAS (submitted, arxiv:1707.03395)
71. *First results from the IllustrisTNG simulations: radio haloes and magnetic fields*
Marinacci, Vogelsberger, Pakmor, **Torrey**, Springel, Hernquist, Nelson, Weinberger, Pillepich, Naiman, & Genel, MNRAS (submitted, arxiv:1707.03396)
72. *First results from the IllustrisTNG simulations: A tale of two elements -- chemical evolution of magnesium and europium*
Naiman, Pillepich, Springel, Ramirez-Ruiz, **Torrey**, Vogelsberger, Pakmor, Nelson, Marinacci, Hernquist, Weinberger, & Genel, MNRAS (submitted, arxiv:1707.03401)
73. *First results from the IllustrisTNG simulations: matter and galaxy clustering*
Springel, Pakmor, Pillepich, Weinberger, Nelson, Hernquist, Vogelsberger, Genel, **Torrey**, Marinacci, & Naiman, MNRAS (submitted, arxiv:1707.03397)
74. *The uniformity and time-invariance of the intra-cluster metal distribution in galaxy clusters from the IllustrisTNG simulations*
Vogelsberger, Marinacci, **Torrey**, Genel, Springel, Weinberger, Pakmor, Hernquist, Naiman, Pillepich, & Nelson, MNRAS, submitted (arxiv:1707.05318)
75. *The Size Evolution of Star-forming and Quenched Galaxies in the IllustrisTNG simulation*
Genel, Nelson, Pillepich, Springel, Pakmor, Weinberger, Hernquist, Naiman, Vogelsberger, Marinacci, & **Torrey**, MNRAS, submitted (arxiv:1707.05327)
76. *Supermassive black holes and their feedback effects in the IllustrisTNG simulation*
Weinberger, Springel, Pakmor, Nelson, Genel, Pillepich, Vogelsberger, Marinacci, Naiman, **Torrey**, & Hernquist, MNRAS, submitted (arxiv:1710.04659)
77. *A census of cool core galaxy clusters in IllustrisTNG*
Barnes, Vogelsberger, Kannan, Marinacci, Weinberger, Springel, **Torrey**, Pillepich, Nelson, Pakmor, Naiman, Hernquist, & McDonald, MNRAS, submitted (arxiv:1710.08420)