

# Mark Reuben Krumholz

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## PERSONAL DETAILS

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Full name      Mark Reuben Krumholz  
Address        Research School of Astronomy & Astrophysics, Australian National University  
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## PROFESSIONAL APPOINTMENTS

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2015 - present    Full Professor (Level E)  
                      *Research School of Astronomy and Astrophysics, Australian National University*

2012 - 2015      Associate Professor (with tenure)  
                      *Astronomy and Astrophysics Department, University of California, Santa Cruz*

2008 - 2012      Assistant Professor  
                      *Astronomy and Astrophysics Department, University of California, Santa Cruz*

2005 - 2008      Hubble, Spitzer, and Council on Science and Technology Postdoctoral Fellow  
                      *Department of Astrophysical Sciences, Princeton University*

## AWARDS AND HONOURS

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2022              Australian Research Council Laureate Fellowship  
2020              Humboldt Research Award, Alexander von Humboldt Foundation  
2019              Anne Green Prize, Astronomical Society of Australia  
2018              Australian Research Council Future Fellowship  
2016              Hunstead Lectureship, Sydney Institute for Astronomy, University of Sydney  
2015              Blaauw Professorship, Kapteyn Astronomical Institute, University of Groningen  
2013              Helen B. Warner Prize, American Astronomical Society  
2010              National Science Foundation CAREER award  
2009              Alfred P. Sloan Research Fellowship  
2007              Kavli / National Academy of Sciences / JSPS Frontiers Fellow  
2006              Princeton University Society of Fellows (declined)  
2005              Hubble Postdoctoral Fellowship  
2005              NSF Postdoctoral Fellowship (declined)  
2005              Lyman Spitzer, Jr. Postdoctoral Fellowship  
2005              Council on Science and Technology Fellowship (Princeton University)  
2005              Mary Elizabeth Uhl Prize for best PhD thesis in astrophysics (UC Berkeley)

## ACADEMIC QUALIFICATIONS

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Aug 2005        Doctor of Philosophy, Physics  
                      *University of California, Berkeley*

May 2000        Master of Arts, Physics  
                      *University of California, Berkeley*

Jun 1998        Bachelor of Arts, Physics with Certificate in Applied and Computational Mathematics  
                      *Princeton University*

## Books

1. **Krumholz, M. R.** 2017, *Star Formation*, World Scientific Publishing: Singapore (528 pages), ISBN 978-981-3142-02-2.

## Major reviews (refereed)

9. Chevance, M., **Krumholz, M. R.**, McLeod, A. F., Ostriker, E. C., Rosolowsky, E. W., & Sternberg, A. 2022, “The Life and Times of Giant Molecular Clouds”, in *Protostars and Planets VII*, eds. S.-i. Inutsuka, Y. Aikawa, T. Muto, K. Tomida, & M. Tamura, U. Arizona Press, in press, arXiv:2203.09570.
8. **Krumholz, M. R.**, McKee, C. F., & Bland-Hawthorn, J. 2019, “Star Clusters Across Cosmic Time”, *Annual Reviews of Astronomy & Astrophysics*, 57, 227.
7. **Krumholz, M. R.**, & Federrath, C. 2019, “The Role of Magnetic Fields in Setting the Star Formation Rate and the Initial Mass Function”, *Frontiers in Astronomy and Space Sciences*, 6, 7.
6. **Krumholz, M. R.** 2015, “The Formation of Very Massive Stars”, in *Very Massive Stars in the Local Universe*, ed. J. S. Vink, Springer, 412, 43.
5. Dobbs, C. L., **Krumholz, M. R.**, Ballesteros-Paredes, J., Bolatto, A., Fukui, Y., Heyer, M., Mac Low, M.-M., Ostriker, E. C., & Vazquez-Semadeni, E. 2014, “Formation of Molecular Clouds and Global Conditions for Star Formation”, in *Protostars & Planets VI*, eds. H. Beuther, R. Klessen, C. Dullemond, Th. Henning, U. of Arizona Press, pp. 3-26.
4. **Krumholz, M. R.**, Bate, M. R., Arce, H. G., Dale, J. E., Gutermuth, R., Klein, R. I., Li, Z.-Y., Nakamura, F., & Zhang, Z. 2014, “Star Cluster Formation and Feedback”, in *Protostars & Planets VI*, eds. H. Beuther, R. Klessen, C. Dullemond, Th. Henning, U. of Arizona Press, pp. 243-266.
3. Tan, J. C., Beltran, M. T., Caselli, P., Fontani, F., Fuente, A., **Krumholz, M. R.**, McKee, C. F., & Stolte, A. 2014, “Massive Star Formation”, in *Protostars & Planets VI*, eds. H. Beuther, R. Klessen, C. Dullemond, Th. Henning, U. of Arizona Press, pp. 149-172.
2. **Krumholz, M. R.** 2014, “The Big Problems in Star Formation: the Star Formation Rate, Stellar Clustering, and the Initial Mass Function”, *Physics Reports*, 539, 49.
1. Klessen, R., **Krumholz, M. R.**, & Heitsch, F. 2011, “Numerical Star-Formation Studies – A Status Report”, *Advanced Science Letters*, 4, 258.

## Journal articles (refereed)

\* indicates author is a student or postdoc who was under MRK’s direct supervision

230. **Krumholz, M. R.**, Crocker, R. M., & Offner, S. S. R. 2023, “The cosmic ray ionisation and  $\gamma$ -ray budgets of star-forming galaxies”, submitted to *Monthly Notices of the Royal Astronomical Society*, arXiv:2211.03488.
229. Menon, S. H.\* , Federrath, C., & **Krumholz, M. R.** 2023, “Outflows Driven by Direct and Reprocessed Radiation Pressure in Massive Star Clusters”, submitted to *Monthly Notices of the Royal Astronomical Society*, arXiv:2210.02818.
228. Forbes, J. C., *et al.* 2023, “Gas Accretion Can Drive Turbulence in Galaxies”, submitted to *AAS Journals*, arXiv:2204.05344.
227. Sharda, P.\* , *et al.* 2023, “The impact of carbon and oxygen abundances on the metal-poor initial mass function”, *Monthly Notices of the Royal Astronomical Society*, in press, arXiv:2211.05505.
226. Sampson, M. L.\* , Beattie, J. R.\* , **Krumholz, M. R.**, Crocker, R. M., Federrath, C., & Seta, A. 2022, “Turbulent diffusion of streaming cosmic rays in compressible, partially ionised plasma”, *Monthly Notices of the Royal Astronomical Society*, in press, arXiv:2205.08174.
225. Yuan, Y.\* , **Krumholz, M. R.**, & Martin, C. L. 2022, “The observable properties of cool winds from galaxies, AGN, and star clusters – II. 3D models for the multiphase wind of M82”, *Monthly Notices of the Royal Astronomical Society*, in press, arXiv:2204.05006.
224. Wibking, B. D.\* , & **Krumholz, M. R.** 2022, “The global structure of magnetic fields and gas in simulated Milky Way-analogue galaxies”, *Monthly Notices of the Royal Astronomical Society*, in press, arXiv:2105.04136.
223. Li, Z.\* , *et al.* 2023, “Spatial metallicity distribution statistics at  $\lesssim 100$  pc scales in the AMUSING++ nearby galaxy sample”, *Monthly Notices of the Royal Astronomical Society*, 518, 286.

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222. Crocker, R. M., *et al.* 2022, “Detection of gamma-ray emission from the Sagittarius Dwarf Spheroidal galaxy”, *Nature Astronomy*, 6, 1317.

221. **Krumholz, M. R.**, Crocker, R. M., & Sampson, M. L. 2022, “Cosmic ray interstellar propagation tool using Itô Calculus (CRIPTIC): software for simultaneous calculation of cosmic ray transport and observational signatures”, *Monthly Notices of the Royal Astronomical Society*, 517, 1355.
220. Menon, S. H.\* , Federrath, C., & **Krumholz, M. R.** 2022, “Infrared radiation feedback does not regulate star cluster formation”, *Monthly Notices of the Royal Astronomical Society*, 517, 1313.
219. Tanvir, T. S.\* , **Krumholz, M. R.**, & Federrath, C. 2022, “Environmental variation of the low-mass IMF”, *Monthly Notices of the Royal Astronomical Society*, 516, 5712.
218. Beattie, J. R.\* , **Krumholz, M. R.**, Skolidis, R., Federrath, C., Seta, A., Crocker, R. M., Mocz, P., & Kriel, N. 2022, “Energy balance and Alfvén Mach numbers in compressible magnetohydrodynamic turbulence with a large-scale magnetic field”, *Monthly Notices of the Royal Astronomical Society*, 515, 5267.
217. Beattie, J. R.\* , **Krumholz, M. R.**, Federrath, C., Sampson, M. L.\* , & Crocker, R. M. 2022, “Ion Alfvén velocity fluctuations and implications for the diffusion of streaming cosmic rays”, *Frontiers in Astronomy and Space Sciences*, 9, 900900.
216. Seligman, D. Z., *et al.* 2022, “The Volatile Carbon to Oxygen Ratio as a Tracer for the Formation Locations of Interstellar Comets”, *The Planetary Science Journal*, 3, 150.
215. Ginzburg, O., Dekel, A., Mandelker, N., & **Krumholz, M. R.** 2022, “The evolution of turbulent galactic discs: gravitational instability, feedback, and accretion”, *Monthly Notices of the Royal Astronomical Society*, 513, 6177.
214. Wibking, B. D.\* , & **Krumholz, M. R.** 2022, “QUOKKA: a code for two-moment AMR radiation hydrodynamics on GPUs”, *Monthly Notices of the Royal Astronomical Society*, 512, 1430.
213. Menon, S. H.\* , Federrath, C., **Krumholz, M. R.**, Kuiper, R., Wibking, B. D.\* , & Jung, M. 2022, “VETTAM: a scheme for radiation hydrodynamics with adaptive mesh refinement using the variable Eddington tensor method”, *Monthly Notices of the Royal Astronomical Society*, 512, 401.
212. Seligman, D. Z., *et al.* 2022, “Theoretical and Observational Evidence for Coriolis Effects in Coronal Magnetic Fields via Direct Current Driven Flaring Events”, *The Astrophysical Journal*, 929, 54.
211. Hu, Z.\* , **Krumholz, M. R.**, Pokhrel, R., & Gutermuth, R. A. 2022, “High-precision star-formation efficiency measurements in nearby clouds”, *Monthly Notices of the Royal Astronomical Society*, 511, 1431.
210. Henshaw, J. D., *et al.* 2022, “A wind-blown bubble in the Central Molecular Zone cloud G0.253+0.016”, *Monthly Notices of the Royal Astronomical Society*, 509, 4758.
209. Sharda, P.\* , *et al.* 2022, “First extragalactic measurement of the turbulence driving parameter: ALMA observations of the star-forming region N159E in the Large Magellanic Cloud”, *Monthly Notices of the Royal Astronomical Society*, 509, 2180.
208. Sharda, P.\* , & **Krumholz, M. R.** 2022, “When did the initial mass function become bottom-heavy?”, *Monthly Notices of the Royal Astronomical Society*, 509, 1959.
207. Orozco-Duarte, R., *et al.* 2022, “Synthetic photometry of OB star clusters with stochastically sampled IMFs: analysis of models and HST observations”, *Monthly Notices of the Royal Astronomical Society*, 509, 522.
206. Chevance, M., *et al.* 2022, “Pre-supernova feedback mechanisms drive the destruction of molecular clouds in nearby star-forming disc galaxies”, *Monthly Notices of the Royal Astronomical Society*, 509, 272.
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205. Arora, R.\* , **Krumholz, M. R.**, & Federrath, C. 2021, “Quantifying stochasticity-driven uncertainties in H II region metallicities”, *Monthly Notices of the Royal Astronomical Society*, 508, 3290.
204. Li, P. S., *et al.* 2021, “ORION2: A magnetohydrodynamics code for star formation”, *Journal of Open Source Software*, 6, 3771.
203. Menon, S. H.\* , *et al.* 2021, “The dependence of the hierarchical distribution of star clusters on galactic environment”, *Monthly Notices of the Royal Astronomical Society*, 507, 5542.
202. Khullar, S.\* , Federrath, C., **Krumholz, M. R.**, & Matzner, C. D. 2021, “The density structure of supersonic self-gravitating turbulence”, *Monthly Notices of the Royal Astronomical Society*, 507, 4335.

201. Komarova, L., Oey, M. S., **Krumholz, M. R.**, Silich, S., Kumari., N., & James, B. L. 2021, “Emission-line Wings Driven by Lyman Continuum in the Green Pea Analog Mrk 71”, *The Astrophysical Journal*, 920, L46.
200. Roth, M. A. \*, **Krumholz, M. R.**, Crocker, R. M., & Celli, S. 2021, “The diffuse  $\gamma$ -ray background is dominated by star-forming galaxies”, *Nature*, 597, 341.
199. Sharda, P. \*, Wisnioski, E., **Krumholz, M. R.**, & Federrath, C. 2021, “The role of gas kinematics in setting metallicity gradients at high redshift”, *Monthly Notices of the Royal Astronomical Society*, 506, 1295.
198. Yu, X., Bian, F., **Krumholz, M. R.**, Shi, Y., Li, S., & Chen, J. 2021, “The major mechanism to drive turbulence in star-forming galaxies”, *Monthly Notices of the Royal Astronomical Society*, 505, 5075.
197. Callanan, D., *et al.* 2021, “The centres of M83 and the Milky Way: opposite extremes of a common star formation cycle”, *Monthly Notices of the Royal Astronomical Society*, 505, 4310.
196. Jeffreson, S. M. R. \*, **Krumholz, M. R.**, Fujimoto, Y., Armillotta, L., Keller, B. W., Chevance, M., & Kruijssen, J. M. D. 2021, “Momentum feedback from marginally resolved H II regions in isolated disc galaxies”, *Monthly Notices of the Royal Astronomical Society*, 505, 3470.
195. Jeffreson, S. M. R. \*, Keller, B. W., Winter, A. J., Chevance, M., Kruijssen, J. M. D., **Krumholz, M. R.**, & Fujimoto, Y. 2021, “A scaling relation for the molecular cloud lifetime in Milky Way-like galaxies”, *Monthly Notices of the Royal Astronomical Society*, 505, 1678.
194. Li, Z. \*, **Krumholz, M. R.**, Wisnioski, E., Mendel, J. T., Kewley, L. J., Sánchez, S. F., & Galbany, L. 2021, “Detection of metallicity correlations in 100 nearby galaxies”, *Monthly Notices of the Royal Astronomical Society*, 504, 5496.
193. Sharda, P. \*, **Krumholz, M. R.**, Wisnioski, E., Acharyya, A., & Federrath, C. 2021, “On the origin of the mass-metallicity gradient relation in the local Universe”, *Monthly Notices of the Royal Astronomical Society*, 504, 53.
192. Della Bruna, L., *et al.* 2021, “Studying the ISM at  $\sim 10$  pc scale in NGC 7793 with MUSE. II. Constraints on the oxygen abundance and ionising radiation escape”, *Astronomy & Astrophysics*, 650, A103.
191. Crocker, R. M, **Krumholz, M. R.**, & Thompson, T. A. 2021, “Cosmic rays across the star-forming galaxy sequence. II: Stability limits and the onset of cosmic ray-driven outflows”, *Monthly Notices of the Royal Astronomical Society*, 503, 2651.
190. Sharda, P. \*, Federrath, C., **Krumholz, M. R.**, & Schleicher, D. R. G. 2021, “Magnetic field amplification in accretion discs around the first stars: implications for the primordial IMF”, *Monthly Notices of the Royal Astronomical Society*, 503, 2014.
189. Nam, D. G. \*, Federrath, C., & **Krumholz, M. R.** 2021, “Testing the Turbulent Origin of the Stellar Initial Mass Function”, *Monthly Notices of the Royal Astronomical Society*, 503, 1138.
188. Pokhrel, R., *et al.* 2021, “The Single-Cloud Star Formation Relation”, *The Astrophysical Journal*, 912, L19.
187. Hu, Z. \*, **Krumholz, M. R.**, Federrath, C., Pokhrel, R., & Gutermuth, R. A. 2021, “Reconstructing three-dimensional densities from two-dimensional observations of molecular gas”, *Monthly Notices of the Royal Astronomical Society*, 502, 5997.
186. Sharda, P. \*, **Krumholz, M. R.**, Wisnioski, E., Forbes, J. C., Federrath, C., & Acharyya, A. 2021, “The physics of gas phase metallicity gradients in galaxies”, *Monthly Notices of the Royal Astronomical Society*, 502, 5935.
185. Roy, A. \*, Dopita, M. A., **Krumholz, M. R.**, Kewley, L. J., Sutherland, R. S., & Heger, A. 2021, “On the origin of nitrogen at low metallicity”, *Monthly Notices of the Royal Astronomical Society*, 502, 4359.
184. Crocker, R. M, **Krumholz, M. R.**, & Thompson, T. A. 2021, “Cosmic rays across the star-forming galaxy sequence. I: Cosmic ray pressures and calorimetry”, *Monthly Notices of the Royal Astronomical Society*, 502, 1312.
183. Olivier, G. M., Lopez, L. A., Rosen, A. L., Omnarayani, N., Reiter, M., **Krumholz, M. R.**, & Bolatto, A. D. 2021, “Evolution of Stellar Feedback in H II Regions”, *The Astrophysical Journal*, 908, 68.
- 2020 —
182. Burkhart, B., *et al.* 2020, “The Catalogue for Astrophysical Turbulence Simulations (CATS)”, *The Astrophysical Journal*, 905, 14.
181. Fujimoto, Y., **Krumholz, M. R.**, Inustuka, S.-I., Boss, A. P., & Nitter, L. R. 2020, “Formation and evolution of the local interstellar environment: combined constraints from nucleosynthetic and X-ray data”, *Monthly Notices of the Royal Astronomical Society*, 498, 5532.

180. Barnes, A. T., Longmore, S. N., Dale, J. E., **Krumholz, M. R.**, & Kruijssen, J. M. D. 2020, “Which feedback mechanisms dominate in the high-pressure environment of the Central Molecular Zone?”, *Monthly Notices of the Royal Astronomical Society*, 498, 4906.
179. **Krumholz, M. R.**, Ireland, M. J., & Kratter, K. M. 2020, “Dynamics of small grains in transitional discs”, *Monthly Notices of the Royal Astronomical Society*, 498, 3023.
178. Yuan, Y.\* , **Krumholz, M. R.**, & Burkhardt, B. 2020, “Understanding biases in measurements of molecular cloud kinematics using line emission”, *Monthly Notices of the Royal Astronomical Society*, 498, 2440.
177. Haydon, D. T., Kruijssen, J. M. D., Hygate, A. P. S., Schrubba, A., **Krumholz, M. R.**, Chevance, M., & Longmore, S. N. 2020, “An uncertainty principle for star formation - III. The characteristic emission time-scales of star formation rate tracers”, *Monthly Notices of the Royal Astronomical Society*, 498, 235.
176. Haydon, D. T., Fujimoto, Y., Chevance, M., Kruijssen, J. M. D., **Krumholz, M. R.**, & Longmore, S. N. 2020, “An uncertainty principle for star formation - V. The influence of dust extinction on star formation rate tracer lifetimes and the inferred molecular cloud lifecycle”, *Monthly Notices of the Royal Astronomical Society*, 497, 5076.
175. Fujimoto, Y.\* , **Krumholz, M. R.**, & Inutsuka, S.-I. 2020, “Distribution and kinematics of  $^{26}\text{Al}$  in the Galactic disc”, *Monthly Notices of the Royal Astronomical Society*, 497, 2242.
174. Sharda, P.\* , Federrath, C., & **Krumholz, M. R.** 2020, “The importance of magnetic fields for the initial mass function of the first stars”, *Monthly Notices of the Royal Astronomical Society*, 497, 336.
173. Rosen, A. L., & **Krumholz, M. R.** 2020, “The Role of Outflows, Radiation Pressure, and Magnetic Fields in Massive Star Formation”, *The Astrophysical Journal*, 160, 78.
172. Acharyya, A.\* , **Krumholz, M. R.**, Federrath, C., Kewley, L. J., Goldbaum, N. J.\* , & Sharp, R. 2020, “Quantifying the effects of spatial resolution and noise on galaxy metallicity gradients”, *Monthly Notices of the Royal Astronomical Society*, 495, 3819.
171. Varidel, M. R., *et al.* 2020, “The SAMI galaxy survey: gas velocity dispersions in low- $z$  star-forming galaxies and the drivers of turbulence”, *Monthly Notices of the Royal Astronomical Society*, 495, 2265.
170. Roy, A.\* , Sutherland, R. S., **Krumholz, M. R.**, Heger, A., & Dopita, M. A. 2020, “Helium and nitrogen enrichment in massive main-sequence stars: mechanisms and implications for the origin of WNL stars”, *Monthly Notices of the Royal Astronomical Society*, 494, 3861.
169. **Krumholz, M. R.**, & McKee, C. F. 2020, “How do bound star clusters form?”, *Monthly Notices of the Royal Astronomical Society*, 494, 624.
168. Armillotta, L.\* , **Krumholz, M. R.**, & Di Teodoro, E. M. 2020, “The life cycle of the Central Molecular Zone. II: Distribution of atomic and molecular gas tracers”, *Monthly Notices of the Royal Astronomical Society*, 493, 5273.
167. **Krumholz, M. R.**, Crocker, R. M., Xu, S., Lazarian, A., Rosevear, M. T.\* , & Bedwell-Wilson, J.\* 2020, “Cosmic ray transport in starburst galaxies”, *Monthly Notices of the Royal Astronomical Society*, 493, 2817.
166. Gentry, E. S.\* , Madau, P., & **Krumholz, M. R.** 2020, “Momentum injection by clustered supernovae: testing sub-grid feedback prescriptions”, *Monthly Notices of the Royal Astronomical Society*, 492, 1243.
- 2019 —
165. Armillotta, L.\* , **Krumholz, M. R.**, Di Teodoro, E. M., & McClure-Griffiths, N. M. 2019, “The life cycle of the Central Molecular Zone. I: Inflow, star formation, and winds”, *Monthly Notices of the Royal Astronomical Society*, 490, 4401.
164. Pleintinger, M. M. M., Siegert, T., Diehl, R., Fujimoto, Y.\* , Greiner, J., Krause, M. G. H., & **Krumholz, M. R.** 2019, “Comparing simulated  $^{26}\text{Al}$  maps to gamma-ray measurements”, *Astronomy & Astrophysics*, 632, A73.
163. Sharda, P.\* , **Krumholz, M. R.**, & Federrath, C. 2019, “The role of the  $\text{H}_2$  adiabatic index in the formation of the first stars”, *Monthly Notices of the Royal Astronomical Society*, 490, 513.
162. Crundall, T. D.\* , Ireland, M. J., **Krumholz, M. R.**, & Federrath, C. 2019, “CHRONOSTAR: a novel Bayesian method for kinematic age determination. I: Derivation and application to the  $\beta$  Pictoris Moving Group”, *Monthly Notices of the Royal Astronomical Society*, 489, 3625.
161. Dekel, A., Sarkar, K. C., Jiang, F., Bournaud, F., **Krumholz, M. R.**, Ceverino, D., & Primack, J. 2019, “The global star formation law by supernova feedback”, *Monthly Notices of the Royal Astronomical Society*, 488, 4753.

160. Khullar, S.\* , **Krumholz, M. R.**, Federrath, C., & Cunningham, A. J. 2019, “Determining star formation thresholds from observations”, *Monthly Notices of the Royal Astronomical Society*, 488, 1407.
159. Forbes, J. C., **Krumholz, M. R.**, & Speagle, J. S. 2019, “Towards a radially-resolved semi-analytic model for the evolution of disc galaxies tuned with machine learning”, *Monthly Notices of the Royal Astronomical Society*, 487, 3581.
158. Fujimoto, Y.\* , Haydon, D. T., Chevance, M., **Krumholz, M. R.**, & Kruijssen, J. M. D. 2019, “A fundamental test for stellar feedback recipes in galaxy simulations”, *Monthly Notices of the Royal Astronomical Society*, 487, 1717.
157. Cook, D. O., *et al.* 2019, “Star cluster catalogues for the LEGUS dwarf galaxies”, *Monthly Notices of the Royal Astronomical Society*, 484, 4897.
156. Gentry, E. S.\* , **Krumholz, M. R.**, Madau, P., & Lupi, A. 2019, “The momentum budget of clustered supernova feedback in a 3D, magnetised medium”, *Monthly Notices of the Royal Astronomical Society*, 483, 3647.
155. McCann, J. R., Murray-Clay, R. A., Kratter, K., & **Krumholz, M. R.** 2019, “Morphology of Hydrodynamic Winds: A Study of Planetary Winds in Stellar Environments”, *The Astrophysical Journal*, 873, 89.
154. Popping, G., Narayanan, D., Somerville, R., Faist, A. L., & **Krumholz, M. R.** 2019, “The art of modeling CO, [C I], and [C II] in cosmological galaxy formation models”, *Monthly Notices of the Royal Astronomical Society*, 482, 4906.
153. **Krumholz, M. R.**, Adamo, A., Fumagalli, M., & Calzetti, D. 2019, “SLUG IV: a novel forward-modelling method to derive the demographics of star clusters”, *Monthly Notices of the Royal Astronomical Society*, 482, 3550.

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152. Armillotta, L.\* , **Krumholz, M. R.**, & Fujimoto, Y.\* 2018, “Mixing of metals during star cluster formation: statistics and implications for chemical tagging”, *Monthly Notices of the Royal Astronomical Society*, 481, 5000.
151. Crocker, R. M.\* , **Krumholz, M. R.**, Thompson, T. A., Baumgardt, H., & Mackey, D. 2018, “Radiation Pressure Limits on the Star Formation Efficiency and Surface Density of Compact Stellar Systems”, *Monthly Notices of the Royal Astronomical Society*, 481, 4895.
150. Li, Q., Narayanan, D., Davè, R., & **Krumholz, M. R.** 2018, “Dark Molecular Gas in Simulations of  $z \sim 0$  Disk Galaxies”, *The Astrophysical Journal*, 869, 73.
149. Gallagher, M., *et al.* 2018, “Do Spectroscopic Dense Gas Fractions Track Molecular Cloud Surface Densities?”, *The Astrophysical Journal*, 868, L38.
148. Grasha, K., *et al.* 2018, “Connecting young star clusters to CO molecular gas in NGC 7793 with ALMA-LEGUS”, *Monthly Notices of the Royal Astronomical Society*, 481, 1016.
147. Fujimoto, Y.\* , **Krumholz, M. R.**, & Tachibana, S. 2018, “Short-lived radioisotopes in meteorites from Galactic-scale correlated star formation”, *Monthly Notices of the Royal Astronomical Society*, 480, 4025.
146. **Krumholz, M. R.** 2018, “Resolution Requirements and Resolution Problems in Simulations of Radiative Feedback in Dusty Gas”, *Monthly Notices of the Royal Astronomical Society*, 480, 3468.
145. Ashworth, G., Fumagalli, M., Adamo, A., & **Krumholz, M. R.** 2018, “Theoretical predictions for IMF diagnostics in UV spectroscopy of star clusters”, *Monthly Notices of the Royal Astronomical Society*, 480, 3091.
144. Guszejnov, D., Hopkins, P. F., Grudić, **Krumholz, M. R.**, & Federrath, C. 2018, “Isothermal Fragmentation: Is there a low-mass cut-off?”, *Monthly Notices of the Royal Astronomical Society*, 480, 182.
143. Michalowski, M. J., *et al.* 2018, “Molecular gas masses of gamma-ray burst host galaxies”, *Astronomy & Astrophysics*, 617, A143.
142. Onus, A.\* , **Krumholz, M. R.**, & Federrath, C. 2018, “Numerical calibration of the HCN-star formation correlation”, *Monthly Notices of the Royal Astronomical Society*, 479, 1702.
141. Jeffreson, S. M. R., Kruijssen, J. M. D., **Krumholz, M. R.**, & Longmore, S. N. 2018, “On the physical mechanisms governing the cloud lifecycle in the Central Molecular Zone of the Milky Way”, *Monthly Notices of the Royal Astronomical Society*, 478, 3380.
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21. **Krumholz, M. R.**, McKee, C. F., & Tumlinson, J. 2008, “The Atomic to Molecular Transition in Galaxies. I: An Analytic Approximation for Photodissociation Fronts in Finite Clouds”, *Astrophysical Journal*, 689, 865.
20. Offner, S. S. R., **Krumholz, M. R.**, Klein, R. I., & McKee, C. F. 2008, “The Dynamics of Molecular Cloud Cores in Driven and Undriven Turbulence Environments”, *Astronomical Journal*, 136, 404.
19. **Krumholz, M. R.** & McKee, C. F. 2008, “A Minimum Column Density of  $1 \text{ g cm}^{-2}$  for Massive Star Formation”, *Nature*, 451, 1082.
18. Kratter, K. M., Matzner, C. D., & **Krumholz, M. R.** 2008, “Global Models for the Evolution of Embedded, Accreting Protostellar Disks”, *Astrophysical Journal*, 681, 375.

– 2007 –

17. **Krumholz, M. R.**, Stone, J. M & Gardiner, T. A. 2007, “Magnetohydrodynamic Evolution of H II Regions: Simulation Methodology, Convergence Tests, and Uniform Media”, *Astrophysical Journal*, 671, 518.

16. **Krumholz, M. R.**, & Thompson, T. A. 2007, “The Relationship Between Molecular Gas Tracers and Kennicutt-Schmidt Laws”, *Astrophysical Journal*, 669, 289.
15. **Krumholz, M. R.**, Klein, R. I., McKee, C. F., & Bolstad, J. 2007, “Equations and Algorithms for Mixed-Frame Flux Limited Diffusion Radiation Hydrodynamics”, *Astrophysical Journal*, 667, 626.
14. **Krumholz, M. R.**, Klein, R. I., & McKee, C. F. 2007, “Molecular Line Emission from Massive Protostellar Disks: Predictions for ALMA and the EVLA”, *Astrophysical Journal*, 665, 478.
13. **Krumholz, M. R.** & Thompson, T. A. 2007, “Mass Transfer in Close, Rapidly Accreting Protobinaries: An Origin for Massive Twins?”, *Astrophysical Journal*, 661, 1034.
12. **Krumholz, M. R.**, Klein, R. I., & McKee, C. F. 2007, “Radiation-Hydrodynamic Simulations of Collapse and Fragmentation in Massive Protostellar Cores”, *Astrophysical Journal*, 656, 959.
11. **Krumholz, M. R.**, & Tan, J. C. 2007, “Slow Star Formation in Dense Gas: Evidence and Implications”, *Astrophysical Journal*, 654, 304.

– 2006 –

10. **Krumholz, M. R.**, Matzner, C. D., & McKee, C. F. 2006, “The Global Evolution of Giant Molecular Clouds. I: Model Formulation and Quasi-Equilibrium Behavior”, *Astrophysical Journal*, 653, 361.
9. Tan, J. C., **Krumholz, M. R.**, & McKee, C. F. 2006, “Equilibrium Star Cluster Formation”, *Astrophysical Journal Letters*, 641, 121.
8. **Krumholz, M. R.** 2006, “Radiation Feedback and Fragmentation in Massive Protostellar Cores”, *Astrophysical Journal Letters*, 641, 45.
7. **Krumholz, M. R.**, McKee, C. F., & Klein, R. I. 2006, “Bondi-Hoyle Accretion in a Turbulent Medium”, *Astrophysical Journal*, 638, 369.

– 2005 –

6. **Krumholz, M. R.**, McKee, C. F., & Klein, R. I. 2005, “The Formation of Stars by Gravitational Collapse Rather Than Competitive Accretion”, *Nature*, 438, 332.
5. **Krumholz, M. R.**, & McKee, C. F. 2005, “A General Theory of Turbulence-Regulated Star Formation, From Spirals to Ultraluminous Infrared Galaxies”, *Astrophysical Journal*, 630, 250.
4. **Krumholz, M. R.**, McKee, C. F., & Klein, R. I. 2005, “How Protostellar Outflows Help Massive Stars Form”, *Astrophysical Journal Letters*, 618, 33.
3. **Krumholz, M. R.**, McKee, C. F., & Klein, R. I. 2005, “Bondi Accretion in the Presence of Vorticity”, *Astrophysical Journal*, 618, 757.

– 2004 and earlier –

2. **Krumholz, M. R.**, McKee, C. F., & Klein, R. I. 2004, “Embedding Lagrangian Sink Particles in Eulerian Grids”, *Astrophysical Journal*, 611, 399.
1. **Krumholz, M. R.**, Thorsett, S. E., & Harrison, F. A. 1998, “Gamma-Ray Bursts and the Cosmic Star Formation Rate,” *Astrophysical Journal Letters*, 506, 81.

*Invited conference proceeds (refereed and non-refereed)*

9. Vink, J. S., Heger, A., **Krumholz, M. R.**, *et al.* 2013, “Very Massive Stars (VMS) in the Local Universe”, in “Highlights of Astronomy, Volume 16, XXVIIth IAU General Assembly”, ed. T. Montmerle, 16, 51.
8. **Krumholz, M. R.** 2011, “Star Formation in Molecular Clouds”, in “XVth Special Courses at the National Observatory of Rio de Janeiro”, eds. E. Telles, R. Dupke, & D. Lazzaro, AIP Conference Proceedings, (Melville, NY: AIP), 1386, 9.
7. **Krumholz, M. R.** 2011, “Star Formation with Adaptive Mesh Refinement Radiation Hydrodynamics” (refereed review), in “IAU Symposium 270: Computational Star Formation”, eds. B. Elmegreen, J. Girart, & V. Trimble, (Cambridge: Cambridge University Press), 270, 187.

6. **Krumholz, M. R.** 2010, “How Radiation Feedback Affects Fragmentation and the IMF”, in “Up2010: Have Observations Revealed a Variable Upper End of the Initial Mass Function?”, eds. M. Treyer, T. Wyder, D. Neill, M. Seibert, & J. Lee, ASP Conference Series, (San Francisco: ASP), 440, 91.
5. **Krumholz, M. R.** & Bonnell, I. A. 2009, “Models for the Formation of Massive Stars”, in “Structure Formation in the Universe”, in “Structure Formation in the Universe”, ed. G. Chabrier, (Cambridge: Cambridge University Press), 288.
4. **Krumholz, M. R.** 2008, “From Massive Cores to Massive Stars”, in “Pathways Through an Eclectic Universe: A Conference Celebrating John Beckman’s 40 Years of Active Research in Astrophysics”, eds. J. Knapen, T. Mahoney, & A. Vazdekis, ASP Conference Series, (San Francisco: ASP), 390, 16.
3. **Krumholz, M. R.** 2008, “Collapse, Fragmentation, and Accretion in Massive Cores”, in “Massive Star Formation: Observations Confront Theory”, eds. H. Beuther, H. Linz, and T. Henning, ASP Conference Series, (San Francisco: ASP), 387, 200.
2. **Krumholz, M. R.** 2006, “High Mass Star Formation by Gravitational Collapse of Massive Cores”, in “Proceedings of the 2006 Space Telescope Science Institute May Symposium: Massive Star Formation: From Pop III and GRBs to the Milky Way”, astro-ph/0607429.
1. **Krumholz, M. R.** 2006, “Massive Star Formation: A Tale of Two Theories”, in “New Horizons in Astronomy, Proceedings of the 2005 Frank N. Bash Symposium”, eds. S. Kannappan, S. Redfield, N. Drory, J. Kessler-Silacci, & M. Landriau, ASP Conference Series, (San Francisco: ASP), 352, 31.

#### *Contributed conference proceedings (non-refereed)*

8. Fumagalli, M.\*, & da Silva, R.\*, **Krumholz, M. R.**, & Bigiel, F. 2010, “SLUG: A New Way to Stochastically Light Up Galaxies”, in “Up2010: Have Observations Revealed a Variable Upper End of the Initial Mass Function?”, eds. M. Treyer, T. Wyder, D. Neill, M. Seibert, & J. Lee, ASP Conference Series, (San Francisco: ASP), 440, 155.
7. Kratter, K. M., Matzner, C. D., & **Krumholz, M. R.** 2008, “Embedded, Accreting Disks in Massive Star Formation”, in “Massive Star Formation: Observations Confront Theory”, eds. H. Beuther, H. Linz, and T. Henning, ASP Conference Series, (San Francisco: ASP), 387, 262.
6. **Krumholz, M. R.** 2007, “Turbulence, Feedback, and Slow Star Formation”, in “IAU Symposium 237: Triggered Star Formation in a Turbulent ISM”, eds. B. G. Elmegreen & J. Palous, IAU Symposium Series, (Cambridge: Cambridge University Press), 237, 378.
5. **Krumholz, M. R.**, Klein, R. I., & McKee, C. F. 2005, “Radiation Pressure in Massive Star Formation”, in “IAU Symposium 227: Massive Star Birth: A Crossroads of Astrophysics”, eds. R. Cesaroni, E. Churchwell, M. Felli, & C. M. Walmsley, IAU Symposium Series, (Cambridge: Cambridge University Press), 227, 231.
4. **Krumholz, M. R.**, McKee, C. F., & Klein, R. I. 2004, “Embedding Lagrangian Sink Particles in Eulerian Grids”, in “Star Formation in the Interstellar Medium, a workshop in honor of David Hollenbach, Chris McKee, and Frank Shu”, eds. F. C. Adams, D. Johnstone, D. N. C. Lin, & E. C. Ostriker, ASP Conference Series, (San Francisco: ASP), 323, 401.
3. **Krumholz, M. R.**, Fisher, R. T., Klein, R. I., & McKee, C. F. 2003, “Realistic Initial Conditions for Star Formation Simulations”, *Revista Mexicana de Astronomía y Astrofísica*, 15, 138.
2. Klein, R. I., Fisher, R. T., **Krumholz, M. R.**, & McKee, C. F. 2003, “Recent Advances in Collapse and Fragmentation of Turbulent Molecular Cloud Cores”, *Revista Mexicana de Astronomía y Astrofísica*, 15, 92.
1. Shrauner, J. A., Stairs, I. H., Dewey, R. J., **Krumholz, M. R.**, Taylor, H. E., Taylor, J. H., & Thorsett, S. E. 1996, “Mark IV: A Phase Coherent Observing System for Pulsars,” in “IAU Symposium 160: Pulsars: Problems and Progress”, eds. S. Johnson, M. A. Walker, & M. Bailes, ASP Conference Series, (San Francisco: ASP), 23.

#### *Popular journalism*

3. **Krumholz, M. R.** Review of *Parallax*, by Alan Hirshfeld, *San Francisco Bay Guardian*, Sep 1, 2001.
2. **Krumholz, M. R.** Review of *The Neptune File*, by Tom Standage, *San Francisco Bay Guardian*, Apr 1, 2001.
1. **Krumholz, M. R.** “Astronomy and its Discontents” (feature article), *San Francisco Bay Guardian*, Mar 7, 2001.

## TEACHING EXPERIENCE

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### *Courses at Australian National University*

2022	ASTR 4008/8008: Star Formation
2021	ASTR 4017/8007: Diffuse Matter in Space
2020	ASTR 4008/8008: Star Formation
2019	ASTR 4003/8003: High Energy Astrophysics
2018	ASTR 4008/8008: Star Formation
2017	ASTR 3007/6007: The Stars
2016	ASTR 4008/8008: Star Formation

### *Courses at University of California, Santa Cruz*

2015	AST 119: Introduction to Scientific Computing
2014	AST 220B: Star and Planet Formation AST 230: Diffuse Matter in Space Digital Arts and New Media (DANM) 250C: Project Course
2013	EPS 119: Introduction to Scientific Computing
2012	AST 220B: Star and Planet Formation AST 230: Diffuse Matter in Space
2011	AST 220B: Star and Planet Formation EPS 119: Introduction to Scientific Computing
2010	AST 230: Diffuse Matter in Space
2009	AST 112: The Physics of Stars EPS 119: Introduction to Scientific Computing AST 220B: Star and Planet Formation

## SUPERVISION AND MENTORING

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### *Postdoctoral researchers*

2022 -	Aditi Vijayan
2019 - 2022	Benjamin Wibking
2018 - 2020	Arpita Roy
2017 - 2019	Lucia Armillotta
2017 - 2019	Yusuke Fujimoto
2014 - 2016	Chalence Safranek-Shrader
2011 - 2013	Ji-hoon Kim
2010 - 2012	Chao-Chin Yang

### *PhD students*

In progress	Zipeng Hu, Neco Kriel, Zefeng Li, Shyam Menon, Karlie Noon, Matt Roth, Tabassum Tanvir
2022	Piyush Sharda Thesis: <i>The Role of Metals from Molecular Clouds to Galactic Discs</i>
2020	Ayan Acharyya (secondary supervisor) Thesis: <i>Evolution of Gas-Phase Metallicity Across Cosmic Time</i>
2019	Eric Gentry Thesis: <i>The Momentum Yield of Clustered SNe; Machine Learning to Identify Dwarf Galaxies</i>
2017	Anna Rosen Thesis: <i>The Destructive Birth of Massive Stars and Massive Star Clusters</i>
2016	John Forbes Thesis: <i>Numerical Experiments in Galactic Disks: Gravitational Instability, Stochastic Accretion, and Galactic Winds</i>
2015	Nathan Goldbaum Thesis: <i>Star Formation in Gravitationally Unstable Disk Galaxies: from Clouds to Disks</i>
2014	Robert da Silva Thesis: <i>Stochastically Lighting Up Galaxies: Statistical Implications of Stellar Clustering</i>
2012	Michele Fumagalli (secondary supervisor) Thesis: <i>Food for Stars: The Role of Hydrogen in the Formation and Evolution of Galaxies</i>
2011	Laura Lopez Thesis: <i>The Tumultuous Lives and Deaths of Stars</i>

### *Masters students*

In progress	Ruizhou Hua
2020	Donghee Nam Thesis: <i>Testing the Turbulent Origin of the Stellar Initial Mass Function</i>
2020	Zipeng Hu Thesis: <i>Reconstructing Three-Dimensional Densities from Two-Dimensional Observations of Molecular Gas</i>
2020	Raghav Arora (degree awarded by Birla Institute of Technology & Science, Pilani) Thesis: <i>Quantifying stochasticity-driven uncertainties in H II region metallicities</i>
2019	Shivan Khullar (degree awarded by Birla Institute of Technology & Science, Pilani) Thesis: <i>Star Formation Thresholds: Real and Illusory</i>
2018	Timothy Crundall Thesis: <i>Characterising the Kinematic Substructure of Young Stellar Associations: A Bayesian Analysis</i>

### *Honours (Australia) / senior thesis (USA) students*

2022	Janet Tang Thesis: <i>Star cluster population properties in LEGUS galaxies using stochastic stellar population synthesis models</i>
2021	Jia Wei Teh Thesis: <i>Constraining the Escape Fraction with LEGUS-SIGNALS Observations: A Pilot Study of NGC 628</i>
2021	Matt Sampson Thesis: <i>Cosmic ray transport through compressible magnetohydrodynamic turbulence</i>
2019	Melanie Robertson Thesis: <i>Gamma-Ray Constraints on the Cosmic Ray Ionisation Rate in Starburst Galaxies</i>
2014	Theodore Rendahl Thesis: <i>Stochasticity in Nebular Emission Lines</i>
2013	Jonathan Parra Thesis: <i>Detecting Variations of the High Mass End of the Stellar Initial Mass Function from Unresolved Star Clusters</i>
2012	Jonathan Craig Thesis: <i>Close Encounters in the Stellar Birth Cluster</i>
2011	Donald Dukes Thesis: <i>Nemesis</i>
2011	Lev Gendelev Thesis: <i>Evolution of Blister-Type H II Regions in a Magnetized Medium</i>

### ACADEMIC AND RESEARCH LEADERSHIP

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2018 - present	Associate Director for Education, Research School of Astronomy & Astrophysics, ANU
2016 - 2018	Associate Director for Academics, Research School of Astronomy & Astrophysics, ANU
2014 - 2016	NASA Theoretical and Computational Astrophysics Network on Star Formation – UC Santa Cruz node leader

### PROFESSIONAL SERVICE

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#### *National and international committees*

2021 - present	Member, Astronomy Australia Ltd., Science Advisory Committee
2020	Chair, Astronomy Australia Ltd., Astronomical Supercomputer Time Allocation Committee
2016 - 2019	Member, Australian National Computational Merit Allocation Committee
2017 - 2018	Member, Astronomy Australia Ltd. eResearch Advisory Committee
2014	Member, Committee of Visitors, Astronomy Division, National Science Foundation
2013	External Review Committee, Cologne-Bonn Cooperative Research Center (SFB 956)

#### *Journal editorial and refereeing service*

2011 - present	Editorial Board Member, <i>Scientific Reports</i>
2005 - present	Referee for <i>Nature</i> , <i>Science</i> , <i>The Astrophysical Journal</i> , <i>Monthly Notices of the Royal Astronomical Society</i> , <i>Astronomy &amp; Astrophysics</i> , <i>The Journal of Computational Physics</i>

#### *Scientific schools*

2021	Organising committee, Institute of Astrophysics of Andalucia Severo Ochoa Advanced School on Star Formation
2013	Director, University of California High Performance AstroComputing Center Summer School
2012	Lecturer, 30th Jerusalem Winter School on Theoretical Physics
2010	Organising committee, International Summer Institute for Modelling in Astrophysics, Santa Cruz, CA, USA



2010 Lecturer, 15th Special Courses of the National Observatory of Rio de Janeiro

*Public service*

2009 - 2015 Founder and director, *UC Santa Cruz Project for Inmate Education*

2005 - 2008 Founder and director, *Princeton Prison Teaching Initiative*

2000 - 2005 Advisory board member, *Prison University Project*

*Public lectures*

2017 Australian Institute of Physics public lecture, Hobart

2015 Blaauw Lecture, Studium Generale, Gröningen, Netherlands

2015 Benjamin Dean Lecture, California Academy of Sciences

RESEARCH GRANTS AND FELLOWSHIPS

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2022 *Unveiling the Winds of Star-Forming Galaxies*  
Australian Research Council Laureate Fellowship (FL220100020)  
AU\$2,647,737

2020 *Humboldt Research Award*  
Alexander von Humboldt Foundation  
€60,000

2018 - 2022 *The Cosmic Distribution of Metals*  
Australian Research Council Future Fellowship (FT180100375)  
AU\$978,125

2019 - 2022 *The Role of Radiation and Cosmic Rays in Galaxy Formation*  
Australian Research Council Discovery Projects (DP190101258)  
AU\$430,000  
Chief investigator

2018 - 2019 *The Life Cycle of Star-Forming Regions in the Era of Next Generation Telescopes*  
Universities Australia - Deutscher Akademischer Austauschdienst  
AU\$18,000  
Chief investigator

2016 - 2018 *Modelling the Distribution of Metals in the Universe*  
Australian Research Council Discovery Projects (DP160100695)  
AU\$389,800  
Chief investigator

2015 - 2017 *The Origin of the Stellar Mass Spectrum in Turbulence and Feedback*  
NASA Astrophysics Theory Program  
US\$394,043  
Principal investigator

2014 - 2016 *Transport of Metals in Galactic Disks and Beyond*  
NSF Astronomy & Astrophysics Research Program  
US\$460,107  
Principal investigator

2014 - 2016 *From the ISM to the IMF: Multi-Scale, Multi-Physics Simulations of Star Formation*  
NASA Theoretical and Computational Astrophysics Networks  
US\$498,368  
Principal investigator (UC Santa Cruz node)

- 2013 - 2014     *LEGUS: Legacy Extragalactic UV Survey*  
 NASA / STScI HST General Observer Program  
 US\$31,691  
 Co-investigator
- 2013 - 2014     *Simulating the Birth of Massive Star Clusters: Is Destruction Inevitable?*  
 NASA / STScI HST Theory Program  
 US\$119,825  
 Administrative principal investigator (Science PI: Anna Rosen)
- 2013 - 2014     *Tools for Stellar Population Synthesis in the Stochastic Regime*  
 NASA / STScI HST Theory Program  
 US\$80,109  
 Principal investigator
- 2012             *Acquisition of a High-Performance Parallel Computing Cluster for Astrophysics*  
 NSF Major Research Infrastructure Program  
 US\$910,000  
 Senior associate
- 2010 - 2015     *Toward a Predictive Theory of Star Formation*  
 NSF CAREER Program  
 US\$663,347  
 Principal investigator
- 2012 - 2015     *The Effect of Feedback on the Formation of High Mass Stars: From High Mass Cores to Massive Star Clusters*  
 NASA Astrophysics Theory Program  
 US\$92,214  
 Co-investigator
- 2011 - 2013     *Probing X-Ray Emission in H II Regions with Chandra*  
 NASA *Chandra* Telescope Theory Program  
 US\$60,800  
 Administrative principle investigator (Science PI: Laura Lopez)
- 2009 - 2013     Alfred P. Sloan Research Fellowship  
 US\$50,000
- 2009 - 2012     *The Formation of High Mass Stars and their Feedback Effects*  
 NASA Astrophysics Theory Program  
 US\$85,979  
 Co-investigator
- 2008 - 2011     *The Hidden Lives of Massive Protostars*  
 NSF Astronomy & Astrophysics Research Program  
 US\$425,514  
 Principal investigator
- 2008 - 2010     *Simulating Star Formation in Space and Time*  
 NASA / Jet Propulsion Laboratory *Spitzer* Theoretical Research  
 US\$125,000  
 Principal investigator

#### INVITED TALKS

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##### *Invited lecture series*

- 2016             Hunstead Lectures, U. Sydney  
 2015             Blaauw Lectures, U. Gröningen  
 2014             Israeli Centers of Research Excellence (ICORE) Lectures, Hebrew U. and Tel Aviv U.

### *Plenary and keynote talks*

- 2022 Institute of Astrophysics of Andalucia Severo Ochoa Meeting, Granada, Spain
- 2019 New Horizons in Galactic Center Astronomy, Yokohama, Japan
- 2018 Tracing the Flow: Galactic Environments and the Formation of Massive Stars, Lake Windermere, UK
- 2018 The Early Phase of Star Formation, Ringberg, Germany
- 2017 Disk Instabilities Across Cosmic Scales, Sexten, Italy
- 2017 Higgs Symposium, Higgs Centre for Theoretical Physics, Edinburgh, UK
- 2017 Astronomical Society of Australia Anne Green Prize Lecture, Brisbane, Australia
- 2014 Warner Prize Lecture, American Astronomical Society, National Harbor, MD, USA
- 2013 Protostars and Planets VI, Heidelberg, Germany
- 2012 Very Massive Stars in the Local Universe (IAU Joint Discussion), Beijing, China
- 2010 Great Barriers to Massive Star Formation, Townsville, Australia

### *Other invited conference talks*

- 2023 Timescales in Astrophysics, NYU Abu Dhabi
- 2022 European Astronomical Society meeting, Valencia, Spain
- 2022 From Stars to Galaxies II, U. Gothenburg, Sweden
- 2022 Midwestern Magnetic Fields, U. Wisconsin, Madison, WI, USA
- 2019 Understanding the Nearby Star-Forming Universe, Courmayeur, Italy
- 2018 The Interstellar Medium of Galaxies (van de Hulst Centennial Meeting), Leiden, Netherlands
- 2018 The Laws of Star Formation (Festschrift for Robert Kennicutt), Cambridge, UK
- 2017 Multi-Scale Star Formation, Morelia, Mexico
- 2017 The Physics of the ISM: What Have We Learned, Cologne, Germany
- 2016 The Universal Problem of a Non-Universal IMF, Lorentz Center, Leiden, Netherlands
- 2016 IAU Symposium: The Multi-Messenger Astrophysics of the Galactic Centre, Cairns, Australia
- 2016 Discs in Galaxies, Munich Joint Conference, Garching, Germany
- 2016 Molecules and Dust as Fuel to Star Formation, Kavli Institute for Theoretical Physics, Santa Barbara, CA, USA
- 2015 The Physics and Chemistry of Star Formation, Zermatt, Switzerland
- 2014 From Galactic to Extragalactic Star Formation, Marseille, France
- 2014 Fire Down Below: The Impact of Feedback on Star and Galaxy Formation, Santa Barbara, CA, USA
- 2013 Supernovae and Gamma-Ray Bursts 2013, Kyoto, Japan
- 2012 Frontiers in Star Formation, Yale University, New Haven, CT, USA
- 2012 Star formation and the Interstellar Medium, 35 Years Later (Festschrift for David Hollenbach, Chris McKee, and Frank Shu), Berkeley, CA, USA
- 2012 IAU Symposium: Molecular Gas, Dust, and Star Formation in Galaxies, Beijing, China
- 2012 Star Formation in Dwarf Galaxies, Lowell Observatory, Flagstaff, AZ, USA
- 2012 Circumstellar Dynamics at High Resolution, Igauca Falls, Brazil
- 2012 AstroSim 2012, Davos, Switzerland
- 2011 Aspen Senior School on Galaxy Formation, Aspen Center for Physics, Aspen, CO, USA talk
- 2010 Up2010: Have Observations Revealed a Variable Upper End of the Initial Mass Function, Sedona, AZ, USA
- 2010 The Frontier on the Interstellar Medium, Beijing, China
- 2010 IAU Symposium: Computational Star Formation, Barcelona, Spain
- 2010 Molecules in Galaxies, Oxford, UK
- 2010 From Stars to Galaxies, Gainesville, FL, USA
- 2010 The Interstellar Medium and the Dynamics of Star Formation, Nagoya, Japan
- 2010 High Energy Density Laboratory Astrophysics Meeting, Pasadena, CA, USA
- 2009 The Gaseous Evolution of Galaxies, Ringberg, Germany
- 2009 Assembly, Gas Content, and Star Formation History of Galaxies (4th North American ALMA Conference), Charlottesville, VA, USA
- 2009 SFR@50: Filling the Cosmos with Stars, Abazia di Spineto, Italy
- 2009 Kavli Institute for Theoretical Physics Workshop on Star Clusters, Santa Barbara, CA, USA
- 2008 The EVLA Vision: Galaxies through Cosmic Time, Socorro, NM, USA
- 2008 Back to the Galaxy II, Kavli Institute for Theoretical Physics, Santa Barbara, CA, USA
- 2008 The Birth and Feedback of Massive Stars (3rd North American ALMA Conference), Charlottesville, VA, USA
- 2007 Star Formation: Then and Now, Kavli Institute for Theoretical Physics, Santa Barbara, CA, USA
- 2007 Gas Accretion and Star Formation in Galaxies, Garching, Germany

- 2007 Through Disks to Stars and Planets (2nd North American ALMA Conference), Charlottesville, VA, USA
- 2007 Pathways Through an Eclectic Universe (Festschrift for John Dyson), Santiago del Teide, Spain
- 2006 Massive Star Formation: From Pop III and GRBs to the Milky Way, Space Telescope Science Institute, Baltimore, MD, USA
- 2005 New Horizons in Astronomy: Frank N. Bash Symposium, Austin, TX, USA

*Departmental colloquia*

- 2005 - present Invited colloquia at approximately 50 institutions in countries including Australia, Canada, China, Denmark, France, Germany, Israel, Japan, Netherlands, Spain, Sweden, UK, USA