

Daniel Foreman-Mackey

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Research Scientist, Center for Computational Astronomy, Flatiron Institute

Professional preparation

2022–, Research Scientist, Flatiron Institute.

2017–2022, Associate Research Scientist, Flatiron Institute.

2015–2017, Sagan Postdoctoral Fellow, University of Washington.

PhD 2015, Department of Physics, New York University. Advisor: Hogg

MSc 2010, Department of Physics, Queen's University, Canada. Advisor: Widrow

BSc 2008, Department of Physics, McGill University, Canada.

Selected publications

- 7 **Foreman-Mackey, Daniel**; Luger, Rodrigo; Agol, Eric; Barclay, Thomas; *et al.*, 2021, *exoplanet: Gradient-based probabilistic inference for exoplanet data & other astronomical time series*, The Journal of Open Source Software, **6**, 3285 ([arXiv:2105.01994](#)) [204 citations]
- 6 **Foreman-Mackey, Daniel**; Farr, Will; Sinha, Manodeep; Archibald, Anne; *et al.*, 2019, *emcee v3: A Python ensemble sampling toolkit for affine-invariant MCMC*, The Journal of Open Source Software, **4**, 1864 ([arXiv:1911.07688](#)) [261 citations]
- 5 **Foreman-Mackey, Daniel**; Agol, Eric; Ambikasaran, Sivaram; & Angus, Ruth, 2017, *Fast and Scalable Gaussian Process Modeling with Applications to Astronomical Time Series*, The Astronomical Journal, **154**, 220 ([arXiv:1703.09710](#)) [809 citations]
- 4 **Foreman-Mackey, Daniel**; Morton, Timothy D.; Hogg, David W.; Agol, Eric; & Schölkopf, Bernhard, 2016, *The Population of Long-period Transiting Exoplanets*, The Astronomical Journal, **152**, 206 ([arXiv:1607.08237](#)) [85 citations]
- 3 **Foreman-Mackey, Daniel**, 2016, *corner.py: Scatterplot matrices in Python*, The Journal of Open Source Software, **1**, 2 [2650 citations]
- 2 Ambikasaran, Sivaram; **Foreman-Mackey, Daniel**; Greengard, Leslie; Hogg, David W.; & O'Neil, Michael, 2016, *Fast Direct Methods for Gaussian Processes*, IEEE Transactions on Pattern Analysis and Machine Intelligence, **38**, 252 ([arXiv:1403.6015](#)) [868 citations]
- 1 **Foreman-Mackey, Daniel**; Hogg, David W.; Lang, Dustin; & Goodman, Jonathan, 2013, *emcee: The MCMC Hammer*, Publications of the Astronomical Society of the Pacific, **125**, 306 ([arXiv:1202.3665](#)) [11594 citations]

Popular open-source software

emcee — MCMC sampling in Python. Popular in astronomy; the paper has over 1000 citations. [emcee.readthedocs.io](#)

george — Blazingly fast Gaussian processes for regression. Implemented in C++ and Python bindings. Joint work with applied mathematicians at NYU. [george.readthedocs.io](#)

celerite — Scalable computations for Gaussian process regression for one-dimensional problems. [celerite.readthedocs.io](#)

corner.py — Simple corner plots (or scatterplot matrices) in Python. [corner.readthedocs.io](#)