

## Jo Bovy

Department of Astronomy and Astrophysics

University of Toronto

Assistant Professor

Canada Research Chair in Galactic Astrophysics

### Education and Training:

Institute for Advanced Study	Astrophysics	Postdoctoral	2011–2015
New York University	Physics	PhD	2006–2011
Katholieke Universiteit Leuven	Physics	MA	2001–2005

### Appointments:

Assistant Professor	Astronomy & Astrophysics	University of Toronto, 2015–present
Consultant	Cent. Comput. Astrophys.	Flatiron Institute, 2016–2017
Long-term Member	School of Natural Sciences	Institute for Advanced Study, 2011–2015

### Selected Honors and Awards:

Helen B. Warner Prize for Astronomy, American Astronomical Society, 2019

Vera Rubin Early Career Prize, Division on Dynamical Astronomy (AAS), 2019

Alfred P. Sloan Fellow, 2016

R. Jack and Forest Lynn Biard Lecturer in Astrophysics, Caltech, 2016

Canada Research Chair in Galactic Astrophysics (Tier 2), 2015

John N. Bahcall Fellowship, Institute for Advanced Study, 2014

Hubble Fellowship, 2011

Dr. Pliny A. and Margaret H. Price Prize in Cosmology and AstroParticle Physics, Ohio State University, 2010

### Professional Activities and Affiliations:

Member of SDSS-IV, CFIS, LSST, Euclid and CASTOR surveys

Chair, APOGEE-1 Science Working Group, 2014-2015

Co-coordinator, KITP program “Dynamical Models for Stars and Gas in Galaxies in the *Gaia* Era”, 2019

Co-coordinator & conference organizer, KITP program “Galactic Archaeology and Precision Stellar Astrophysics”, 2015

Writer and maintainer of `galpy`, a Python library for galactic dynamics for use in education and advanced-dynamics computations, 2010–present

Member, SDSS-III BOSS quasar target selection team; BOSS Architect, 2010–2014

### Selected Peer-reviewed Publications:

Bovy J, Farrar GR. Connection between a Possible Fifth Force and the Direct Detection of Dark Matter. *Phys Rev Lett.* 2009;102:101301.

Bovy J, Hogg DW, Rix HW. Galactic Masers and the Milky Way Circular Velocity. *Astrophys J.* 2009;704:1704.

Bovy J, Hennawi JF, Hogg DW, et al. Think Outside the Color Box: Probabilistic Target Selection and the SDSS-XDQSO Quasar Targeting Catalog. *Astrophys J.* 2011;729:141.

Bovy J, Rix HW, Hogg DW. The Milky Way Has No Distinct Thick Disk. *Astrophys J.* 2012;751:131.

- Bovy J, Rix HW, Liu C, et al. The Spatial Structure of Mono-abundance Sub-populations of the Milky Way Disk. *Astrophys J.* 2012;753:148.
- Bovy J, Tremaine S. On the Local Dark Matter Density. *Astrophys J.* 2012;756:89.
- Bovy J, Allende Prieto C, Beers TC, et al. The Milky Way's Circular-velocity Curve between 4 and 14 kpc from APOGEE data. *Astrophys J.* 2012;759:131.
- Rix HW, Bovy J. The Milky Way's stellar disk. Mapping and modeling the Galactic disk. *A&A Rev.* 2013;21:61.
- Bovy J, Rix HW. A Direct Dynamical Measurement of the Milky Way's Disk Surface Density Profile, Disk Scale Length, and Dark Matter Profile at  $4 \text{ kpc} \lesssim R \lesssim 9 \text{ kpc}$ . *Astrophys J.* 2013;779:115.
- Nidever DL, Bovy J, Bird JC, et al. Tracing Chemical Evolution over the Extent of the Milky Way's Disk with APOGEE Red Clump Stars. *Astrophys J.* 2014;796:38.
- Bovy J. `galpy`: A Python Library for Galactic Dynamics. *Astrophys J Suppl.* 2015;216:29.
- Hayden, MR, Bovy J, Holtzman, JA, et al. Chemical cartography with APOGEE: Metallicity distribution functions and the chemical structure of the Milky Way disk. *Astrophys J.* 2015;808:132.
- Bovy J. The chemical homogeneity of open clusters. *Astrophys J.* 2016;817:49.
- Bovy J. Detecting the disruption of dark-matter halos with stellar streams. *Phys Rev Lett.* 2016;116:121301.
- Bovy J, Erkal, D, Sanders, J L. Linear perturbation theory for tidal streams and the small-scale CDM power spectrum. *Mon Not Roy Astron Soc.* 2017;446:628.
- Bovy J. Stellar inventory of the solar neighborhood using *Gaia* DR1. *Mon Not Roy Astron Soc.* 2017;470:1360.
- Mackereth JT, Bovy J, Schiavon RP, et al. The age-metallicity structure of the Milky Way disk. *Mon Not Roy Astron Soc.* 2017;471:3057.
- Hunt, JAS, Hong, J, Bovy J, et al. Transient spiral structure and the disc velocity substructure in *Gaia* DR2. *Mon Not Roy Astron Soc.* 2018;481:3794.
- Leung HW, Bovy J. Deep learning of multi-element abundances from high-resolution spectroscopic data. *Mon Not Roy Astron Soc.* 2019;483:3255.
- Bovy J, Leung HW, Hunt JAS, et al. Life in the fast lane: a direct view of the dynamics, formation, and evolution of the Milky Way's bar. *Mon Not Roy Astron Soc.* 2019;490:4740.

### Research Grants:

- Science PI NASA Hubble Fellowship Grant No. HST-HF-51285.01-A:  
Dynamical modeling in the Milky Way and beyond, 2011–2014
- PI NSERC Discovery Grant, 165,000 CAD  
The Milky Way's disk in the age of *Gaia*, 2015–2020
- PI Canada Research Chair in Galactic Astrophysics (Tier 2), 500,000 CAD, 2015–2020
- PI Ontario Early Researcher Award, 140,000 CAD, 2017–2022
- PI UCL - U of T Collaborative Projects and Exchange Activities (w/ Daisuke Kawata)  
28,000 CAD, 2017–2019
- PI HQP Pooled Resources funding, McDonald Institute, 120,000 CAD, 2020–2022