

JO BOVY

Department of Astronomy and Astrophysics
University of Toronto
50 St. George Street
Toronto, ON M5S 3H4, Canada

(416)946-5465
<http://astro.utoronto.ca/~bovy>
jo.bovy@utoronto.ca

EMPLOYMENT

University of Toronto, Toronto, Canada
Professor, 2024–present
Associate Professor, 2020–2024
Assistant Professor, 2015–2020
Institute for Advanced Study, Princeton, NJ
Long-term Member, 2011–2015

VISITING POSITIONS

Center for Computational Astrophysics, Flatiron Institute, New York, NY
Consultant, 2016–2017

EDUCATION

Ph.D., Physics, May 2011
New York University, New York, NY
Postgraduate Studies in Logic, History and Philosophy of Science (~ 1 yr MA), September 2006
Universiteit Gent, Belgium
Master, Physics, *magna cum laude*, June 2005
Katholieke Universiteit Leuven, Belgium
Master, Mathematics, *cum laude*, June 2005
Katholieke Universiteit Leuven, Belgium

HONORS AND FELLOWSHIPS

2025	Herzberg Medal, Canadian Association of Physicists
2024	Steacie Prize
2023	Member of the College of New Scholars, Artists and Scientists, Royal Society of Canada
2023	Giuseppe and Vanna Cocconi Prize (as part of the SDSS/BOSS/eBOSS collaborations), High Energy and Particle Physics Division, European Physical Society
2021	Rutherford Memorial Medal (Physics), Royal Society of Canada
2019	Helen B. Warner Prize for Astronomy, American Astronomical Society
2019	Vera Rubin Early Career Prize, Division on Dynamical Astronomy (AAS)
2016	Alfred P. Sloan Fellow

2016 R. Jack and Forest Lynn Biard Lecturer in Astrophysics, Caltech
 2015 Canada Research Chair in Galactic Astrophysics (Tier 2), renewed 2020
 2014 John N. Bahcall Fellowship, Institute for Advanced Study
 2014 Sofja Kovalevskaja Award, Alexander von Humboldt Foundation (declined)
 2012 Dean's Outstanding Dissertation Award, New York University
 2011 Hubble Fellowship
 2010 Dr. Pliny A. and Margaret H. Price Prize in Cosmology and AstroParticle Physics,
 Ohio State University
 2006 Honorary Fellow of the Belgian American Educational Foundation (BAEF)

PROFESSIONAL ACTIVITIES AND AFFILIATIONS

Survey Leadership and Involvement:

Advisory Council member, Collaboration Council member, SDSS-V (2021-present)
 Member, Near-Field Cosmology Working Group, CASTOR mission (2018–present)
 Member, Canadian Euclid Consortium Steering Committee (2017–present)
 Chair, APOGEE-1 Science Working Group (2014–2015)
 Co-chair, APOGEE-2 Disk Working Group (2013–2014)
 Member, *SDSS-III BOSS* quasar target selection team; *BOSS* Architect (2010–2014)

Refereeing and Panel Review:

Book proposal and manuscript reviews for: *Cambridge University Press*, *IOP Publishing*, *MIT Press*.
 Referee for: *Annalen der Physik*, the *Astronomical Journal*, *Astronomy & Astrophysics*, the *Astrophysical Journal*, the *Astrophysical Journal Letters*, *Astronomy and Computing*, *Celestial Mechanics and Dynamical Astronomy*, *Computer Physics Communications*, the *Journal of the American Statistical Association*, the *Journal for Cosmology and Astroparticle Physics*, the *Monthly Notices of the Royal Astronomical Society*, *Nature*, *Nature Astronomy*, *New Astronomy*, *Physics of the Dark Universe*, *Physics Letters B*, *Physical Review D*, *Physical Review Letters*, the *Publications of the Astronomical Society of the Pacific*, the *Publications of the Astronomical Society of Japan*, and *Science*

ERC Synergy 2023 External Reviewer
 NSERC Discovery Grants Review Committee member, Physics Evaluation Group (2022-2025)
 Hubble Space Telescope Cycle 29 external reviewer (2021)
 Vera Rubin Early Career Prize Committee member, Division on Dynamical Astronomy (AAS; 2021)
 John R. Evans Leaders Fund (JELF), Canada Foundation for Innovation (CFI; 2020)
 Canadian Time Allocation Committee member (CFHT/Gemini; 2017–2020)
 Veni Grant, Netherlands Organisation for Scientific Research, Reviewer (2017)
 DiRAC Resource Allocation (STFC), External Reviewer (2017)
 Ontario Early Researcher Award, Environment and Natural Science panel member (2017)
 Canada-France-Hawaii Telescope Canadian Time Allocation Committee, External Reviewer: 2016A, 2016B
 Australian Time Assignment Committee (for the AAT), Expert science reviewer (2016)
 ERC Consolidator Grant, Remote Reviewer (2016, 2020)
 China Telescope Access Program 2015B External Reviewer (2015)
 NASA Earth and Space Science Fellowship Program 2014 External Reviewer (2014)
 Hubble Space Telescope Cycle 21 Time Allocation Committee (2013)

Seminar and Conference Organization:

SOC member, “Foundation Models for Astronomy” workshop, Flatiron Institute, New York (2025)

SOC member, “Waves in the Milky Way Disk” conference, Shanghai, China (2024)
 SOC member, “Globular Clusters and Their Tidal Tails: From the Milky Way to the Local Group”,
 University of Toronto (2024)
 Co-organizer, Royal Astronomical Society Specialist discussion “Galactic Disc and Halo Dynamics towards
 Gaia EDR3”, London, United Kingdom (02/14/2020)
 SOC member, IAU Symposium “Galactic Dynamics in the Era of Large Surveys”, Shanghai, China (2019)
 Co-organizer, “Petabytes to Science” workshops, organized by the Association of Universities for Research
 in Astronomy (AURA), supported by the Kavli Foundation (2018–2019)
 SOC member, KITP conference “In the Balance: Stasis and Disequilibrium in the Milky Way” (2019)
 Co-coordinator, KITP program “Dynamical Models for Stars and Gas in Galaxies in the *Gaia* Era” (2019)
 Session organizer, International Biomedical and Astronomical Signal Processing (BASP) Frontiers workshop
 (2019)
 SOC member, workshop “Near-field Cosmology with the Dark Energy Survey’s DR1 and Beyond”, KICP,
 UChicago (2018)
 SOC co-chair, workshop “Stellar Streams in the Local Universe”, Ringberg Castle (2015)
 SOC chair, KITP conference “The Milky Way and its stars: stellar astrophysics, Galactic archeology, and
 stellar populations” (2015)
 Co-coordinator, KITP program “Galactic Archaeology and Precision Stellar Astrophysics” (2015)
 IAS Formal Seminar organizer (2012 to 2013)

University of Toronto Service:

DADDAA Associate Chair, Graduate (2023-present)
 CITA faculty search committee (2025)
 DSI Postdoctoral Fellowship Review Panel (2025)
 DADDAA Graduate Program committee (2024–2025 [Chair])
 Dean’s representative, HEP faculty search (2023–2024)
 DADDAA faculty search committee (2021–2022; 2023–2024)
 DADDAA Computing committee, Chair (2020–2022)
 DADDAA Graduate Admissions committee (2020–2021; 2022–2023; 2023–2024 [Chair]; 2024–2025 [Chair])
 DADDAA Graduate General Qualifier committee (2020–2021; 2023–2024 [Chair]; 2024–2025 [Chair])
 DADDAA/Dunlap Colloquium committee (2020–2021)
 A&A–Saint Michael’s College faculty search committee (2019–2020)
 Review committee chair, Dunlap seed funding proposal (2019)
 Internal reviewer for CRC Special Call (2019)
 A&A faculty search committee (2018–2019)
 A&A departmental graduate curriculum committee (2017)
 A&A departmental computing committee (2017)

GRANTS

2024–2025	UofT Data Sciences Institute Research Software Development Support Program, (w/ Joshua Speagle; equivalent to) 60,000 CAD
2025–2026	Resources for Research Groups, Compute Canada, (equivalent to) 18,673 CAD
2024–2025	Resources for Research Groups, Compute Canada, (equivalent to) 18,325 CAD
2023–2024	Resources for Research Groups, Compute Canada, (equivalent to) 74,060 CAD
2022–2023	Resources for Research Groups, Compute Canada, (equivalent to) 95,034 CAD
2021–2022	Resources for Research Groups, Compute Canada, (equivalent to) 76,994 CAD

2020–2025	Canada Research Chair in Galactic Astrophysics (Tier 2), 500,000 CAD
2020–2023	NSERC Discovery Accelerator Supplement, 120,000 CAD
2020–2026	NSERC Discovery Grant, 366,000 CAD
2020–2022	HQP Pooled Resources funding, McDonald Institute, 124,000 CAD
2020–2021	Resources for Research Groups, Compute Canada, (equivalent to) 23,659 CAD
2017–2019	UCL–U of T Collaborative Projects and Exchange Activities (w/ Daisuke Kawata co-PI), 28,000 CAD
2017–2022	Ontario Early Researcher Award, 140,000 CAD
2015–2020	Canada Research Chair in Galactic Astrophysics (Tier 2), 500,000 CAD
2015–2020	NSERC Discovery Grant, 165,000 CAD

Total 2,309,745 CAD

MENTORING

PhD supervision:

Nolan Koblishke (2024-present)

Henry Leung (2020-2024):

Exploring the Milky Way with Deep Learning

James Lane (2019-2024):

On the Use of Distribution Functions for the Study of the Milky Way Stellar Halo in the Gaia Era

Nathaniel Starkman (2019-2024):

Charting the Stellar Streams of the Milky Way

Aarya Patil (2019–2023; w/ Gwen Eadie):

Order in Chaos: Decoding the Age-Metallicity Structure of the Milky Way disk

Victor Chan (2018-2023; w/ Renée Hložek):

Wrestling with Cosmic Scales

Morgan Bennett (2017-2021):

Vertical Oscillations in the Solar Neighbourhood and the Sagittarius Dwarf Galaxy

Natalie Price-Jones (2016-2020):

Strong Chemical Tagging in the Milky Way

Postdoctoral supervision:

Nathan Sandford (2023-present)

Fraser Evans (2022-present)

Yingyi Song (2021-2025)

Neige Frankel (2021-present)

Daniel Gilman (2020-2023)

Joshua Speagle (2020-2022)

J. Ted Mackereth (2020-2022)

David Hendel (2018-2020)

Masen Lamb (2017-2020)

Jeremy Webb (2017-2019)

Jason Hunt (2016-2019)

AST1501/1500 supervision (Toronto 1st year PhD project):

Gabriel Pfaffman (2024-2025)

Nolan Koblishke (2023-2024)

Alicia Savelli (2022-2023)

Jibran Haider (2020)
Wai (Henry) Leung (2019-2020)
Hannah Dykaar (2019)
Aarya Patil (2019)
Harrison Winch (2019)
Adam Butko (2019)
James Lane (2018-2019)
Nathaniel Starkman (2018-2019)
Abhinav Jindal (2018-2019)
Victor Chan (2018)
Morgan Bennett (2017)
Anita Bahmanyar (2015-2016)
Natalie Price-Jones (2015-2016)

AST424/AST425 supervision (Toronto's 4th year undergraduate research course) and similar:

Sam Bernard (2024-2025)
Amanat Brar (2024-2025)
Luke James (2024-2025)
Isabella Armstrong (w/ Fraser Evans; 2023-2024)
Daniel Ding (ESC499; 2021-2022; w/ Joshua Speagle)
Lily Bateman (AST425; 2020-2021)
Yansong Qiang (AST425; 2020-2021)
Chloe Cheng (AST425 2019-2020)
Mathew Bub (RA 2018-2019)
Philip Tsang (CS494; 2017-2018)
Wai (Henry) Leung (AST425 2017-2018; RA 2018-2019)

Summer Undergraduate Project Supervision / ROP 299 UofT summer research course:

Yiwei Jiang (2024)
Aeysha Munawwarah (w/ Fraser Evans; 2024)
Isabella Armstrong (w/ Fraser Evans; 2023)
Alexander Brisebois (2023)
Peter Shi (2023)
Theresa Drobnik (2022-2023)
Alexander Laroche (w/ Daniel Gilman; 2021)
Yumna Arshad (2020)
Turner Garrow (w/ Jeremy Webb; 2019)
Michael Poon (2018)
Samuel Wong (2018)
Wai (Henry) Leung (2018)
Mathew Bub (ROP299, 2018)
Ayush Pandhi (ROP299, 2018)
Jack Hong (2017)
Shaziana Kaderali (2017)
Aladdin Seaifan (2016)

Ph.D. Supervisory Committee:

James Garland (2025-present)
Mairead Heiger (2023-present)
Gavin Noble (2023-present)
Steffani Grondin (2022-present)

Ayush Pandhi (2022-present)
 Samantha Berek (2022-present)
 Jibran Haider (2021-2023)
 Jacob Taylor (2021-present)
 Miranda Herman (2018-2021)
 Jessica Campbell (2018-2022)
 Rejean Leblanc (2017-2019)
 Ryan Cloutier (2016-2019)

Ph.D. Defense / Thesis Qualifier Committee:

Garett Brown (12/2024; defense), Ella Wang (06/2024; External Examiner, Australian National University, defense), Haochuan Li (04/2024; External Examiner, Queen's University, defense), Alexander Kostenko (03/2020; defense), Colleen Gilhuly (09/2018; qualifier), Matthew Chequers (07/2018; External Examiner, Queen's University, defense), Alys Obertas (03/2018; qualifier), Ari Silburt (08/2017; defense), Aleksandar Rachkov (01/2017, 08/2017; qualifier), Yuan-Sen Ting (12/2016; Harvard, defense), Nolan Denman (09/2015; qualifier), Wayne Ngan (08/2015; defense)

PUBLICATIONS

BOOKS

1. **Jo Bovy**, Dynamics and Astrophysics of Galaxies, *Princeton University Press*, in press (Spring 2026) galaxiesbook.org.

REFEREED PUBLICATIONS

170. Isabella Armstrong, Fraser A. Evans, & **Jo Bovy**, The impact of the Galactic bar and the Large Magellanic Cloud on hypervelocity star trajectories, *Astrophys. J.* **984**, 56 (2025) arXiv:2503.17344 [astro-ph.GA].
169. J.-C. Cuillandre, et al., Euclid: Early Release Observations – Programme overview and pipeline for compact- and diffuse-emission photometry, *Astron. & Astrophys.* **697**, A6 (2025) arXiv:2405.13496 [astro-ph.IM].
168. James M. M. Lane & **Jo Bovy**, Distribution functions for the modelling of accretion remnants in Milky Way-like galaxies: insights from IllustrisTNG, *Mon. Not. Roy. Astron. Soc.* **538**, 553 (2025) arXiv:2405.10945 [astro-ph.GA].
167. Daniel Gilman, **Jo Bovy**, Neige Frankel, & Andrew Benson, Dark Galactic subhalos and the Gaia snail, *Astrophys. J.* **980**, 24 (2025) arXiv:2412.02757 [astro-ph.GA].
166. Nathaniel Starkman, Jacob Nibauer, **Jo Bovy**, Jeremy J. Webb, Kiyon Tavanagar, Adrian Price-Whelan, & Ana Bonaca, Stream Members Only: Data-Driven Characterization of Stellar Streams with Mixture Density Networks, *Astrophys. J.* **980**, 253 (2025) arXiv:2311.16960 [astro-ph.GA].
165. D. Massari, E. Dalessandro, D. Erkal, E. Balbinot, **J. Bovy**, et al., Euclid: Early Release Observations – Unveiling the morphology of two Milky Way globular clusters out to their periphery, *Astron. & Astrophys.* **697**, A8 (2025) arXiv:2405.13498 [astro-ph.GA].
164. Jeff Shen, Joshua S. Speagle, Neige Frankel, J. Ted Mackereth, Yuan-Sen Ting, & **Jo Bovy**, Disentangling stellar age estimates from Galactic chemodynamical evolution, *Astrophys. J.* **960**, 84 (2024) arXiv:2305.15634 [astro-ph.GA].
163. Henry W. Leung & **Jo Bovy**, Towards an astronomical foundation model for stars with a Transformer-based model, *Mon. Not. Roy. Astron. Soc.* **527**, 1494 (2024) arXiv:2308.10944 [astro-ph.IM].
162. Andrés Almeida, et al., The eighteenth data release of the Sloan Digital Sky Surveys: Targeting and first spectra from SDSS-V, *Astrophys. J. Supp.* **267**, 44 (2023) arXiv:2301.07688 [astro-ph.GA].

161. Aarya A. Patil, **Jo Bovy**, Sebastian Jaimungal, Neige Frankel, & Henry W. Leung, Decoding the age-chemical structure of the Milky Way disk: An application of copulas and elicitable maps, *Mon. Not. Roy. Astron. Soc.* **526**, 1997 (2023) arXiv:2306.09319 [astro-ph.GA].
160. James M. M. Lane, **Jo Bovy**, & J. Ted Mackereth, The stellar mass of the Gaia-Sausage/Enceladus accretion remnant, *Mon. Not. Roy. Astron. Soc.* **526**, 1209 (2023) arXiv:2306.03084 [astro-ph.GA].
159. Fraser A. Evans, Alexander Rasskazov, Amber Rempelzwaal, Tommaso Marchetti, Alfred Castro-Ginard, Elena Maria Rossi, & **Jo Bovy**, Constraints on the Galactic centre environment from Gaia hypervelocity stars III: Insights on a possible companion to Sgr A*, *Mon. Not. Roy. Astron. Soc.* **525**, 561 (2023) arXiv:2304.12169 [astro-ph.GA].
158. Henry W. Leung, **Jo Bovy**, J. Ted Mackereth, & Andrea Miglio, A variational encoder-decoder approach to precise spectroscopic age estimation for large Galactic surveys, *Mon. Not. Roy. Astron. Soc.* **522**, 4577 (2023) arXiv:2302.05479 [astro-ph.GA].
157. Daniel Gilman, Yi-Ming Zhong, & **Jo Bovy**, Constraining resonant dark matter self-interactions with strong gravitational lenses, *Phys. Rev. D* **107**, 103008 (2023) arXiv:2207.13111 [astro-ph.CO].
156. Nathaniel Starkman, **Jo Bovy**, Jeremy J. Webb, Daniela Calvetti, & Erkki Somersalo, On the fast track: Rapid construction of stellar stream paths, *Mon. Not. Roy. Astron. Soc.* **522**, 5022 (2023) arXiv:2212.00949 [astro-ph.GA].
155. Neige Frankel, **Jo Bovy**, Scott Tremaine, & David W. Hogg, Vertical motion in the Galactic disc: unwinding the Snail, *Mon. Not. Roy. Astron. Soc.* **521**, 5917 (2023) arXiv:2212.11991 [astro-ph.GA].
154. Jeremy J. Webb, Jason A. S. Hunt, & **Jo Bovy**, Made-to-measure modelling of globular clusters, *Mon. Not. Roy. Astron. Soc.* **521**, 3898 (2023) arXiv:2212.06847 [astro-ph.GA].
153. Scott Tremaine, Neige Frankel, & **Jo Bovy**, The origin and fate of the Gaia phase-space snail, *Mon. Not. Roy. Astron. Soc.* **521**, 114 (2023) arXiv:2212.11990 [astro-ph.GA].
152. Henry W. Leung, **Jo Bovy**, J. Ted Mackereth, Jason A. S. Hunt, Richard R. Lane, & John C. Wilson, A direct measurement of the distance to the Galactic center using the kinematics of bar stars, *Mon. Not. Roy. Astron. Soc.* **519**, 948 (2023) arXiv:2204.12551 [astro-ph.GA].
151. Neige Frankel, Annalisa Pillepich, Hans-Walter Rix, Vicente Rodriguez-Gomez, Jason Sanders, **Jo Bovy**, Juna Kollmeier, Norm Murray, & Ted Mackereth, Simulated bars may be shorter but are not slower than observed: TNG50 vs. MaNGA, *Astrophys. J.* **940**, 61 (2022) arXiv:2201.08406 [astro-ph.GA].
150. Alexander Laroche, Daniel Gilman, Xinyu Li, **Jo Bovy**, & Xiaolong Du, Quantum fluctuations masquerade as halos: Bounds on ultra-light dark matter from quadruply-imaged quasars, *Mon. Not. Roy. Astron. Soc.* **517**, 1867 (2022) arXiv:2206.11269 [astro-ph.CO].
149. Pierre Boldrini & **Jo Bovy**, No globular cluster progenitors in Milky Way satellite galaxies, *Mon. Not. Roy. Astron. Soc.* **516**, 4560 (2022) arXiv:2106.09419 [astro-ph.GA].
148. Harrison Winch, Jack Setford, **Jo Bovy**, & David Curtin, Using LSST microlensing to constrain dark compact objects in spherical and disk configurations, *Astrophys. J.* **933**, 177 (2022) arXiv:2012.07136 [astro-ph.GA].
147. Daniel Gilman, Andrew Benson, **Jo Bovy**, Simon Birrer, Tommaso Treu, & Anna Nierenberg, The primordial matter power spectrum on sub-galactic scales, *Mon. Not. Roy. Astron. Soc.* **512**, 3163 (2022) arXiv:2112.03293 [astro-ph.CO].
146. Morgan Bennett, **Jo Bovy**, & Jason A. S. Hunt, Exploring the Sgr-Milky-Way-disc interaction using high resolution N-body simulations, *Astrophys. J.* **927**, 131 (2022) arXiv:2107.08055 [astro-ph.GA].
145. Yansong Qian, Yumna Arshad, & **Jo Bovy**, The structure of accreted stellar streams, *Mon. Not. Roy. Astron. Soc.* **511**, 2339 (2022) arXiv:2201.11045 [astro-ph.GA].
144. James M. M. Lane, **Jo Bovy**, & J. Ted Mackereth, The kinematic properties of Milky Way stellar halo populations, *Mon. Not. Roy. Astron. Soc.* **510**, 5119 (2022) arXiv:2106.09699 [astro-ph.GA].
143. Abdurro'uf, et al., The seventeenth data release of the Sloan Digital Sky Surveys: Complete release of MaNGA, MaStar and APOGEE-2 data, *Astrophys. J. Supp.* **259**, 35 (2022) arXiv:2112.02026 [astro-ph.GA].
142. Jeremy J. Webb & **Jo Bovy**, Variation in the stellar mass function along stellar streams, *Mon. Not. Roy. As-*

- tron. Soc.* **510**, 774 (2022) arXiv:2108.02217 [astro-ph.GA].
141. Aarya A. Patil, **Jo Bovy**, Gwendolyn Eadie, & Sebastian Jaimungal, Functional data analysis for extracting the intrinsic dimensionality of spectra—Application: chemical homogeneity in open cluster M67, *Astrophys. J.* **926**, 51 (2022) arXiv:2109.10891 [astro-ph.GA].
 140. Nilanjan Banik, **Jo Bovy**, Gianfranco Bertone, Denis Erkal, & T. J. L. de Boer, Novel constraints on the particle nature of dark matter from stellar streams, *J. Cosmol. Astropart. Phys.* **10(2021)**, 043 (2021) arXiv:1911.02663 [astro-ph.GA].
 139. Rachael L. Beaton, et al., Final Targeting Strategy for the SDSS-IV APOGEE-2N Survey, *Astron. J.* **162**, 302 (2021) arXiv:2108.11907 [astro-ph.GA].
 138. Daniel Gilman, **Jo Bovy**, Tommaso Treu, Anna Nierenberg, Simon Birrer, Andrew Benson, & Omid Sameie, Strong lensing signatures of self-interacting dark matter in low-mass halos, *Mon. Not. Roy. Astron. Soc.* **507**, 2432 (2021) arXiv:2105.05259 [astro-ph.CO].
 137. Chloe M. Cheng, Natalie Price-Jones, & **Jo Bovy**, Testing the chemical homogeneity of chemically-tagged dissolved birth clusters, *Mon. Not. Roy. Astron. Soc.* **506**, 5573 (2021) arXiv:2010.09721 [astro-ph.GA].
 136. Neal Dalal, **Jo Bovy**, Lam Hui, & Xinyu Li, Don't cross the streams: caustics from fuzzy dark matter, *J. Cosmol. Astropart. Phys.* **03(2021)**, 076 (2021) arXiv:2011.13141 [astro-ph.CO].
 135. Nilanjan Banik & **Jo Bovy**, On N -body simulations of globular cluster streams, *Mon. Not. Roy. Astron. Soc.* **504**, 648 (2021) arXiv:2101.12201 [astro-ph.GA].
 134. eBOSS Collaboration: Shadab Alam, et al., The Completed SDSS-IV extended Baryon Oscillation Spectroscopic Survey: Cosmological Implications from two Decades of Spectroscopic Surveys at the Apache Point observatory, *Phys. Rev. D* **103**, 083533 (2021) arXiv:2007.08991 [astro-ph.CO].
 133. Morgan Bennett & **Jo Bovy**, Did Sgr cause the vertical waves in the solar neighbourhood?, *Mon. Not. Roy. Astron. Soc.* **503**, 376 (2021) arXiv:2010.04165 [astro-ph.GA].
 132. Nilanjan Banik, **Jo Bovy**, Gianfranco Bertone, Denis Erkal, & T. J. L. de Boer, Evidence of a population of dark subhalos from Gaia and Pan-STARRS observations of the GD-1 stream, *Mon. Not. Roy. Astron. Soc.* **502**, 2364 (2021) arXiv:1911.02662 [astro-ph.GA].
 131. Danny Horta Darrington, J. Ted Mackereth, Ricardo Schiavon, Sten Hasselquist, **Jo Bovy**, et al., The contribution of N-rich stars to the Galactic stellar halo using APOGEE red giants, *Mon. Not. Roy. Astron. Soc.* **500**, 5462 (2021) arXiv:2008.01097 [astro-ph.GA]; Erratum *Mon. Not. Roy. Astron. Soc.* **518**, 2471 (2023).
 130. Turner Garrow, Jeremy J. Webb, & **Jo Bovy**, The Effects of Dwarf Galaxies on the Orbital Evolution of Galactic Globular Clusters, *Mon. Not. Roy. Astron. Soc.* **499**, 804 (2020) arXiv:2007.13752 [astro-ph.GA].
 129. Jeremy J. Webb & **Jo Bovy**, High-resolution simulations of dark matter subhalo disruption in a Milky Way-like tidal field, *Mon. Not. Roy. Astron. Soc.* **499**, 116 (2020) arXiv:2006.06695 [astro-ph.GA].
 128. Henrik Jönsson, et al., APOGEE data and spectral analysis from SDSS Data Release 16: Seven years of observations including first results from APOGEE-South, *Astron. J.* **160**, 120 (2020) arXiv:2007.05537 [astro-ph.GA].
 127. Natalie Price-Jones, **Jo Bovy**, Jeremy J. Webb, et al., Strong chemical tagging with APOGEE: 21 candidate star clusters that have dissolved across the Milky Way disc, *Mon. Not. Roy. Astron. Soc.* **496**, 5101 (2020) arXiv:2004.04263 [astro-ph.GA].
 126. Romina Ahumada, et al., The Sixteenth Data Release of the Sloan Digital Sky Surveys: First Release from the APOGEE-2 Southern Survey and Full Release of eBOSS Spectra, *Astrophys. J. Supp.* **249**, 3 (2020) arXiv:1912.02905 [astro-ph.GA].
 125. Jeremy J. Webb, Natalie Price-Jones, **Jo Bovy**, Simon Portegies Zwart, Jason A. S. Hunt, J. Ted Mackereth, & Henry W. Leung, Searching for solar siblings in APOGEE and *Gaia* DR2 with N -body simulations, *Mon. Not. Roy. Astron. Soc.* **494**, 2268 (2020) arXiv:1910.01646 [astro-ph.GA].
 124. Nathaniel Starkman, **Jo Bovy**, & Jeremy J. Webb, An extended Pal 5 stream in Gaia DR2, *Mon. Not. Roy. Astron. Soc.* **493** 4978 (2020) arXiv:1909.03048 [astro-ph.GA].

123. Victor C. Chan & **Jo Bovy**, The *Gaia* DR2 parallax zero point: Hierarchical modeling of red clump stars, *Mon. Not. Roy. Astron. Soc.* **493**, 4367 (2020) arXiv:1910.00398 [astro-ph.SR].
122. James M. M. Lane, Julio F. Navarro, Azadeh Fattahi, Kyle A. Oman, & **Jo Bovy**, The Ophiuchus stream progenitor: a new type of globular cluster and its possible Sagittarius connection, *Mon. Not. Roy. Astron. Soc.* **492**, 4164 (2020) arXiv:1905.12633 [astro-ph.GA].
121. J. Ted Mackereth & **Jo Bovy**, Weighing the stellar constituents of the Galactic halo with APOGEE red giant stars, *Mon. Not. Roy. Astron. Soc.* **492**, 3631 (2020) arXiv:1910.03590 [astro-ph.GA].
120. **Jo Bovy**, Henry W. Leung, Jason A. S. Hunt, J. Ted Mackereth, D. A. García-Hernández, & Alexandre Roman-Lopes, 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.* **490**, 4740 (2019) arXiv:1905.11404 [astro-ph.GA].
119. Jason A. S. Hunt, Mathew W. Bub, **Jo Bovy**, J. Ted Mackereth, Wilma H. Trick, & Daisuke Kawata, Signatures of resonance and phase mixing in the Galactic disc, *Mon. Not. Roy. Astron. Soc.* **490**, 1026 (2019) arXiv:1904.10968 [astro-ph.GA].
118. Henry W. Leung & **Jo Bovy**, Simultaneous calibration of spectro-photometric distances and the *Gaia* DR2 parallax zero-point offset with deep learning, *Mon. Not. Roy. Astron. Soc.* **489**, 2079 (2019) arXiv:1902.08634 [astro-ph.GA].
117. J. Ted Mackereth, **Jo Bovy**, Henry W. Leung, Ricardo P. Schiavon, Wilma H. Trick, et al., Dynamical heating across the Milky Way disc using APOGEE and *Gaia*, *Mon. Not. Roy. Astron. Soc.* **489**, 176 (2019) arXiv:1901.04502 [astro-ph.GA].
116. Jeremy J. Webb, **Jo Bovy**, Raymond G. Carlberg, & Mark Gieles, Modelling the effects of dark matter substructure on globular cluster evolution with the tidal approximation, *Mon. Not. Roy. Astron. Soc.* **488**, 5748 (2019) arXiv:1907.13132 [astro-ph.GA].
115. Abhinav Jindal, Jeremy J. Webb, & **Jo Bovy**, The orbital anisotropy profiles of nearby globular clusters from *Gaia* Data Release 2, *Mon. Not. Roy. Astron. Soc.* **487**, 3693 (2019) arXiv:1903.11070 [astro-ph.GA].
114. Natalie Price-Jones & **Jo Bovy**, Blind chemical tagging with DBSCAN: prospects for spectroscopic surveys, *Mon. Not. Roy. Astron. Soc.* **487**, 871 (2019) arXiv:1902.08201 [astro-ph.GA].
113. Jeremy J. Webb & **Jo Bovy**, Searching for the GD-1 stream progenitor in *Gaia* DR2 with direct N-body simulations, *Mon. Not. Roy. Astron. Soc.* **485**, 5929 (2019) arXiv:1811.07022 [astro-ph.GA].
112. Diogo Souto, C. Allende Prieto, Katia Cunha, Marc Pinsonneault, Verne V. Smith, R. Garcia-Dias, **Jo Bovy**, et al., Chemical abundances of main-sequence, turn-off, subgiant and red giant stars from APOGEE spectra II: Atomic diffusion in M67 stars, *Astrophys. J.* **874**, 97 (2019) arXiv:1902.10199 [astro-ph.SR].
111. Nilanjan Banik & **Jo Bovy**, Effects of baryonic and dark matter substructure on the Pal 5 stream, *Mon. Not. Roy. Astron. Soc.* **484**, 2009 (2019) arXiv:1809.09640 [astro-ph.GA].
110. D. S. Aguado, et al., The fifteenth Data Release from the Sloan Digital Sky Surveys: First release of MaNGA derived quantities, data visualization tools and stellar library, *Astrophys. J. Supp.* **240**, 23 (2019) arXiv:1812.02759 [astro-ph.GA].
109. Henry W. Leung & **Jo Bovy**, Deep learning of multi-element abundances from high-resolution spectroscopic data, *Mon. Not. Roy. Astron. Soc.* **483**, 3255 (2019) arXiv:1808.04428 [astro-ph.GA].
108. J. Ted Mackereth, Ricardo P. Schiavon, Joel Pfeffer, Christian R. Hayes, **Jo Bovy**, et al., The origin of accreted stellar halo populations in the Milky Way using APOGEE, *Gaia*, and the EAGLE simulations, *Mon. Not. Roy. Astron. Soc.* **482**, 3426 (2019) arXiv:1808.00968 [astro-ph.GA].
107. Morgan Bennett & **Jo Bovy**, Vertical waves in the solar neighbourhood in *Gaia* DR2, *Mon. Not. Roy. Astron. Soc.* **482**, 1417 (2019) arXiv:1809.03507 [astro-ph.GA].
106. Daisuke Kawata, **Jo Bovy**, Noriyuki Matsunaga, & Junichi Baba, Galactic Local Circular Velocity from *Gaia* DR1 Cepheids and Effects of Non-Axisymmetry, *Mon. Not. Roy. Astron. Soc.* **482**, 40 (2019) arXiv:1803.05927 [astro-ph.GA].
105. Jason A. S. Hunt, Jack Hong, **Jo Bovy**, Daisuke Kawata, & Robert J. J. Grand, Transient spiral structure and the disc velocity substructure in *Gaia* DR2, *Mon. Not. Roy. Astron. Soc.* **481**, 3794 (2019) arXiv:1806.02832 [astro-ph.GA].
104. J. Ted Mackereth & **Jo Bovy**, Fast estimation of orbital parameters in Milky-Way-like potentials, *Publ. As-*

- tron. Soc. Pacific* **130**, 114501 (2018) arXiv:1802.02592 [astro-ph.GA].
103. Sal Wanying Fu, Joshua D. Simon, Matthew Shetrone, **Jo Bovy**, et al., The origin of the 300 km s⁻¹ stream near Segue 1, *Astrophys. J.* **866**, 42 (2018) arXiv:1804.08622 [astro-ph.GA].
 102. Jon A. Holtzman, Sten Hasselquist, Matthew Shetrone, Katia Cunha, Carlos Allende Prieto, Borja Anguiano, Dmitry Bizyaev, **Jo Bovy**, et al., APOGEE Data Releases 13 and 14: data and analysis, *Astron. J.* **156**, 125 (2018) arXiv:1807.09773 [astro-ph.GA].
 101. Lauren Anderson, David W. Hogg, Boris Leistedt, Adrian M. Price-Whelan, & **Jo Bovy**, Improving *Gaia* parallax precision with a data-driven model of stars, *Astron. J.* **156**, 145 (2018) arXiv:1706.05055 [astro-ph.GA].
 100. Nilanjan Banik, Gianfranco Bertone, **Jo Bovy**, & Nassim Bozorgnia, Probing the nature of dark matter particles with stellar streams, *J. Cosmol. Astropart. Phys.* **07(2018)**, 061 (2018) arXiv:1804.04384 [astro-ph.CO].
 99. Jason A. S. Hunt & **Jo Bovy**, The 4:1 Outer Lindblad Resonance of a long slow bar as a potential explanation for the Hercules stream, *Mon. Not. Roy. Astron. Soc.* **477**, 3945 (2018) arXiv:1803.02358 [astro-ph.GA].
 98. Diane K. Feuillet, **Jo Bovy**, Jon Holtzman, David H. Weinberg, D. A. Garcia-Hernandez, Fred R. Hearty, Steven R. Majewski, Alexandre Roman-Lopes, Jan Rybizki, & Olga Zamora, Age-resolved chemistry of red giants in the solar neighbourhood, *Mon. Not. Roy. Astron. Soc.* **477**, 2326 (2018) arXiv:1803.06352 [astro-ph.GA].
 97. Carles Badenes, Christine Mazzola, Todd A. Thompson, Kevin Covey, Peter E. Freeman, Matthew G. Walker, Maxwell Moe, Nicholas Troup, David Nidever, Carlos Allende Prieto, Brett Andrews, Rodolfo H. Barbá, Timothy C. Beers, **Jo Bovy**, et al., Stellar multiplicity meets stellar evolution and metallicity: The APOGEE view, *Astrophys. J.* **854**, 147 (2018) arXiv:1711.00660 [astro-ph.GA].
 96. Natalie Price-Jones & **Jo Bovy**, The dimensionality of stellar chemical space using spectra from the Apache Point Observatory Galactic Evolution Experiment, *Mon. Not. Roy. Astron. Soc.* **475**, 1410 (2018) arXiv:1706.00009 [astro-ph.GA].
 95. Bela Abolfathi, et al., The Fourteenth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the extended Baryon Oscillation Sky Survey and from the second phase of the Apache Point Observatory Galactic Evolution Experiment, *Astrophys. J. Supp.* **235**, 42 (2018) arXiv:1707.09322 [astro-ph.GA].
 94. Ana E. García Pérez, Melissa Ness, Annie C. Robin, Inmaculada Martinez-Valpuesta, Jennifer Sobeck, Gail Zasowski, Steven R. Majewski, **Jo Bovy**, et al., The Bulge Metallicity Distribution from the APOGEE Survey, *Astron. J.* **852**, 91 (2018) arXiv:1712.01297 [astro-ph.GA].
 93. Jason A. S. Hunt, **Jo Bovy**, Angeles Pérez-Villegas, et al., The Hercules stream as seen by APOGEE-2 South, *Mon. Not. Roy. Astron. Soc.* **474**, 95 (2018) arXiv:1709.02807 [astro-ph.GA].
 92. **Jo Bovy**, Daisuke Kawata, & Jason A. S. Hunt, Made-to-measure modeling of observed galaxy dynamics, *Mon. Not. Roy. Astron. Soc.* **473**, 2288 (2018) arXiv:1704.03884 [astro-ph.GA].
 91. G. Zasowski, R. E. Cohen, S. D. Chojnowski, F. Santana, R. J. Oelkers, B. Andrews, R. L. Beaton, C. Bender, J. C. Bird, **Jo Bovy**, et al., Target Selection for the SDSS-IV APOGEE-2 Survey, *Astron. J.* **154**, 198 (2017) arXiv:1708.00155 [astro-ph.GA].
 90. Franco D. Albareti, et al., The thirteenth data release of the Sloan Digital Sky Survey: First spectroscopic data from the SDSS-IV Survey MAPPING Nearby Galaxies at Apache Point Observatory, *Astrophys. J. Supp.* **233**, 25 (2017) arXiv:1608.02013 [astro-ph.GA].
 89. Steven R. Majewski, et al., The Apache Point Observatory Galactic Evolution Experiment (APOGEE), *Astron. J.* **154**, 94 (2017) arXiv:1509.05420 [astro-ph.GA].
 88. J. Ted Mackereth, **Jo Bovy**, Ricardo P. Schiavon, et al., The age-metallicity structure of the Milky Way disk, *Mon. Not. Roy. Astron. Soc.* **471**, 3057 (2017) arXiv:1706.00018 [astro-ph.GA].
 87. Keith Hawkins, Boris Leistedt, **Jo Bovy**, & David W. Hogg, Red clump stars and Gaia: calibration of the standard candle using a hierarchical probabilistic model, *Mon. Not. Roy. Astron. Soc.* **471**, 722 (2017) arXiv:1705.08988 [astro-ph.GA].
 86. F. Jahandar, K. A. Venn, M. D. Shetrone, M. Irwin, **Jo Bovy**, C. M. Sakari, C. L. Kielty, R. A. R. Digby,

- & P. M. Frinchaboy, The peculiar globular cluster Palomar 1 and its surrounding field in the SDSS-APOGEE database, *Mon. Not. Roy. Astron. Soc.* **470**, 4782 (2017) arXiv:1706.09074 [astro-ph.GA].
85. **Jo Bovy**, Stellar inventory of the solar neighborhood using *Gaia* DR1, *Mon. Not. Roy. Astron. Soc.* **470**, 1360 (2017) arXiv:1704.05063 [astro-ph.GA].
84. Michael R. Blanton, et al., Sloan Digital Sky Survey IV: Mapping the Milky Way, Nearby Galaxies and the Distant Universe, *Astron. J.* **154**, 28 (2017) arXiv:1703.00052 [astro-ph.GA].
83. Y. Q. Chen, L. Casagrande, G. Zhao, **Jo Bovy**, V. Silva Aguirre, J. K. Zhao, & Y. P. Jia, Absolute magnitudes of seismic red clumps in the Kepler field and SAGA: the age dependency of the distance scale, *Astrophys. J.* **840**, 77 (2017) arXiv:1704.03903 [astro-ph.GA].
82. Tobias K. Fritz, Sean Linden, Paul Zivick, Nitya Kallivayalil, Rachael Beaton, **Jo Bovy**, et al., The proper motion of Pyxis: The first use of adaptive optics in tandem with HST on a faint halo object, *Astrophys. J.* **840**, 30 (2017) arXiv:1611.08598 [astro-ph.GA].
81. Wilma H. Trick, **Jo Bovy**, Elena D’Onghia, & Hans-Walter Rix, Action-based dynamical modeling for the Milky Way disk: the influence of spiral arms, *Astrophys. J.* **839**, 61 (2017) arXiv:1703.05970 [astro-ph.GA].
80. **Jo Bovy**, Galactic rotation in *Gaia* DR1, *Mon. Not. Roy. Astron. Soc. Lett.* **468**, L63 (2017) arXiv:1610.07610 [astro-ph.GA].
79. **Jo Bovy**, Denis Erkal, & Jason L. Sanders, Linear perturbation theory for tidal streams and the small-scale CDM power spectrum, *Mon. Not. Roy. Astron. Soc.* **466**, 628 (2017) arXiv:1606.03470 [astro-ph.GA].
78. Jason A. S. Hunt, **Jo Bovy**, & Raymond G. Carlberg, Detection of a dearth of stars with zero angular momentum in the solar neighbourhood, *Astrophys. J. Lett.* **832**, L25 (2016) arXiv:1610.02030 [astro-ph.GA].
77. **Jo Bovy**, Anita Bahmanyar, Tobias K. Fritz, & Nitya Kallivayalil, The shape of the inner Milky Way halo from observations of the Pal 5 and GD–1 stellar streams, *Astrophys. J.* **833**, 31 (2016) arXiv:1609.01298 [astro-ph.GA].
76. Isabelle Pâris, et al., The Sloan Digital Sky Survey Quasar Catalog: Twelfth data release, *Astron. & Astrophys.* **597**, A79 (2017) arXiv:1608.06483 [astro-ph.GA].
75. Denis Erkal, Vasily Belokurov, **Jo Bovy**, & Jason L. Sanders, The number and size of subhalo-induced gaps in stellar streams, *Mon. Not. Roy. Astron. Soc.* **463**, 102 (2016) arXiv:1606.04946 [astro-ph.GA].
74. Diogo Souto, Katia Cunha, Verne Smith, Carlos Allende Prieto, Marc Pinsonneault, Olga Zamora, D. Anibal García-Hernández, Szabolcs Mészáros, **Jo Bovy**, et al., Chemical abundances in a sample of red giants in the open cluster NGC 2420 from APOGEE, *Astrophys. J.* **830**, 35 (2016) arXiv:1607.06102 [astro-ph.SR].
73. Wilma H. Trick, **Jo Bovy**, & Hans-Walter Rix, Action-based dynamical modeling for the Milky Way disk, *Astrophys. J.* **830**, 97 (2016) arXiv:1605.08601 [astro-ph.GA].
72. Ana E. García Pérez, et al., ASPCAP: The APOGEE stellar parameter and chemical abundances pipeline, *Astron. J.* **151**, 144 (2016) arXiv:1510.07635 [astro-ph.SR].
71. **Jo Bovy**, Hans-Walter Rix, Edward F. Schlafly, David L. Nidever, Jon A. Holtzman, Matthew Shetrone, & Timothy C. Beers, The stellar population structure of the Galactic disk, *Astrophys. J.* **823**, 30 (2016) arXiv:1509.05796 [astro-ph.GA].
70. **Jo Bovy**, Detecting the disruption of dark-matter halos with stellar streams, *Phys. Rev. Lett.* **116**, 121301 (2016) arXiv:1512.00452 [astro-ph.GA].
69. Jason L. Sanders, **Jo Bovy**, & Denis Erkal, Dynamics of stream-subhalo interactions, *Mon. Not. Roy. Astron. Soc.* **457**, 3817 (2016) arXiv:1510.03426 [astro-ph.GA].
68. **Jo Bovy**, Hans-Walter Rix, Gregory M. Green, Edward F. Schlafly, & Douglas P. Finkbeiner, On Galactic density modeling in the presence of dust extinction, *Astrophys. J.* **818**, 130 (2016) arXiv:1509.06751 [astro-ph.GA].
67. Kyle S. Dawson, et al., The SDSS-IV extended Baryon Oscillation Spectroscopic Survey: Overview and early data, *Astron. J.* **151**, 44 (2016) arXiv:1508.04473 [astro-ph.CO].

66. **Jo Bovy**, The chemical homogeneity of open clusters, *Astrophys. J.* **817**, 49 (2016) arXiv:1510.06745 [astro-ph.GA].
65. Diane K. Feuillet, **Jo Bovy**, Jon Holtzman, Léo Girardi, Nick MacDonald, & David L. Nidever, Determining ages of APOGEE giants with known distances, *Astrophys. J.* **817**, 40 (2016) arXiv:1511.04088 [astro-ph.GA].
64. Éric Aubourg, et al., Cosmological implications of baryon acoustic oscillation (BAO) measurements, *Phys. Rev. D* **92**, 123516 (2015) arXiv:1411.1074 [astro-ph.CO].
63. Adam D. Myers, Nathalie Palanque-Delabrouille, Abhishek Prakash, Isabelle Pâris, Christophe Yèche, Kyle S. Dawson, **Jo Bovy**, et al., The SDSS-IV extended Baryonic Oscillation Spectroscopic Survey: Quasar target selection, *Astrophys. J. Supp.* **221**, 27 (2015) arXiv:1508.04472 [astro-ph.CO].
62. Jon A. Holtzman, Matthew Shetrone, Jennifer A. Johnson, Carlos Allende Prieto, Friedrich Anders, Brett Andrews, Timothy C. Beers, Dmitry Bizyaev, Michael R. Blanton, **Jo Bovy**, et al., Abundances, stellar parameters, and spectra from the SDSS-III/APOGEE survey, *Astron. J.* **150**, 148 (2015) arXiv:1501.04110 [astro-ph.GA].
61. Robert J. J. Grand, **Jo Bovy**, Daisuke Kawata, Jason A. S. Hunt, Benoit Famaey, Arnaud Siebert, Giacomo Monari, & Mark Cropper, Spiral and bar driven peculiar velocities in Milky Way sized galaxy simulations, *Mon. Not. Roy. Astron. Soc.* **453**, 1867 (2015) arXiv:1506.02668 [astro-ph.GA].
60. Xiang-Xiang Xue, Hans-Walter Rix, Zhibo Ma, Heather Morrison, **Jo Bovy**, Branimir Sesar, & William Janesh, The radial profile and flattening of the Milky Way's stellar halo to 80 kpc from the SEGUE K-giant survey, *Astrophys. J.* **809**, 144 (2015) arXiv:1506.06144 [astro-ph.GA].
59. Michael A. DiPompeo, **Jo Bovy**, Adam D. Myers, & Dustin Lang, Quasar probabilities and redshifts from WISE mid-IR through GALEX UV photometry, *Mon. Not. Roy. Astron. Soc.* **452**, 3124 (2015) arXiv:1507.02884 [astro-ph.CO].
58. Branimir Sesar, **Jo Bovy**, et al., The nature and orbit of the Ophiuchus stream, *Astrophys. J.* **809**, 59 (2015) arXiv:1501.00581 [astro-ph.GA].
57. Michael R. Hayden, **Jo Bovy**, Jon A. Holtzman, et al., Chemical cartography with APOGEE: Metallicity distribution functions and the chemical structure of the Milky Way disk, *Astrophys. J.* **808**, 132 (2015) arXiv:1503.02110 [astro-ph.GA].
56. Marie Martig, Hans-Walter Rix, Victor Silva Aguirre, Saskia Hekker, Benoit Mosser, Yvonne Elsworth, **Jo Bovy**, et al., Young alpha-enriched giant stars in the solar neighbourhood, *Mon. Not. Roy. Astron. Soc.* **451**, 2230 (2015) arXiv:1412.3453 [astro-ph.GA].
55. Shadab Alam, et al., The eleventh and twelfth Data Releases of the Sloan Digital Sky Survey: Final data from SDSS-III, *Astrophys. J. Supp.* **219**, 12 (2015) arXiv:1501.00963 [astro-ph.IM].
54. Szabolcs Mészáros, Sarah L. Martell, Matthew Shetrone, Sara Lucatello, Nicholas Troup, **Jo Bovy**, et al., Exploring anticorrelations and light element variations in northern globular clusters observed by the APOGEE survey, *Astron. J.* **149**, 153 (2015) arXiv:1501.05127 [astro-ph.SR].
53. Nina Hernitschek, Hans-Walter Rix, **Jo Bovy**, & Eric Morganson, Estimating black hole masses in hundreds of quasars, *Astrophys. J.* **801**, 45 (2015) arXiv:1412.6531 [astro-ph.GA].
52. **Jo Bovy**, Jonathan C. Bird, Ana E. García Pérez, Steven R. Majewski, David L. Nidever, & Gail Zasowski, The power spectrum of the Milky Way: Velocity fluctuations in the Galactic disk, *Astrophys. J.* **800**, 83 (2015) arXiv:1410.8135 [astro-ph.GA].
51. **Jo Bovy**, galpy: A python library for galactic dynamics, *Astrophys. J. Supp.* **216**, 29 (2015) arXiv:1412.3451 [astro-ph.GA].
50. Timothée Delubac, et al., Baryon Acoustic Oscillations in the Ly α forest of BOSS DR11 quasars, *Astron. & Astrophys.* **574**, A59 (2015) arXiv:1404.1801 [astro-ph.CO].
49. Marc Pinsonneault, et al., The APOKASC Catalog: An asteroseismic and spectroscopic joint survey of targets in the Kepler fields, *Astrophys. J. Supp.* **215**, 19 (2014) arXiv:1410.2503 [astro-ph.SR].
48. Thaïse S. Rodrigues, Léo Girardi, Andrea Miglio, Diego Bossini, **Jo Bovy**, et al., Bayesian distances and extinctions for giants observed by *Kepler* and APOGEE, *Mon. Not. Roy. Astron. Soc.* **445**, 2758 (2014) arXiv:1410.1350 [astro-ph.SR].

47. David L. Nidever, **Jo Bovy**, et al., Tracing chemical evolution over the extent of the Milky Way's disk with APOGEE red clump stars, *Astrophys. J.* **796**, 38 (2014) arXiv:1409.3566 [astro-ph.GA].
46. **Jo Bovy**, Dynamical modeling of tidal streams, *Astrophys. J.* **795**, 95 (2014) arXiv:1401.2985 [astro-ph.GA].
45. Sarah R. Loebman, Željko Ivezić, Thomas R. Quinn, **Jo Bovy**, Charlotte R. Christensen, Mario Jurić, Rok Roškar, Alyson M. Brooks, & Fabio Governato, The Milky Way tomography with SDSS. V. Mapping the dark matter halo, *Astrophys. J.* **794**, 151 (2014) arXiv:1408.5388 [astro-ph.GA].
44. **Jo Bovy**, et al., The APOGEE red-clump catalog: Precise distances, velocities, and high-resolution elemental abundances over a large area of the Milky Way's disk, *Astrophys. J.* **790**, 12 (2014) arXiv:1405.1032 [astro-ph.GA].
43. Michael R. Hayden, Jon A. Holtzman, **Jo Bovy**, et al., Chemical cartography with APOGEE: Large-scale mean metallicity maps of the Milky Way, *Astron. J.* **147**, 116 (2014) arXiv:1311.4569 [astro-ph.GA].
42. Christopher P. Ahn, et al., The tenth Data Release of the Sloan Digital Sky Survey: first spectroscopic data from the SDSS-III Apache Point Observatory Galactic Evolution Experiment, *Astrophys. J. Supp.* **211**, 17 (2014) arXiv:1307.7735 [astro-ph.IM].
41. Isabelle Pâris, et al., The Sloan Digital Sky Survey quasar catalog: tenth data release, *Astron. & Astrophys.* **563**, A54 (2014) arXiv:1311.4870 [astro-ph.CO].
40. **Jo Bovy** & Hans-Walter Rix, 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.* **779**, 115 (2013) arXiv:1309.0809 [astro-ph.GA].
39. J. Xavier Prochaska, Joseph F. Hennawi, Khee-Gan Lee, Sebastiano Cantalupo, **Jo Bovy**, S.G. Djorgovski, Sara L. Ellison, Marie Wingyee Lau, Crystal L. Martin, Adam Myers, Kate H.R. Rubin, & Robert A. Simcoe, Quasars Probing Quasars VI. Excess H I Absorption within One Proper Mpc of $z \sim 2$ Quasars, *Astrophys. J.* **776**, 136 (2013) arXiv:1308.6222 [astro-ph.CO].
38. G. S. Stinson, **J. Bovy**, H.-W. Rix, C. Brook, R. Roškar, J. D.alcanton, A. V. Macciò, J. Wadsley, H. M. P. Couchman, & T. R. Quinn, MaGICC Thick Disk I: Comparing a Simulated Disk Formed with Stellar Feedback to the Milky Way, *Mon. Not. Roy. Astron. Soc.* **436**, 625 (2013) arXiv:1301.5318 [astro-ph.GA].
37. Yuan-Sen Ting, Hans-Walter Rix, **Jo Bovy**, & Glenn van de Ven, On the study of Galactic potential via action-based mono-abundance stars distribution function, *Mon. Not. Roy. Astron. Soc.* **434**, 652 (2013) arXiv:1212.0006 [astro-ph.GA].
36. Nicholas P. Ross, et al., The SDSS-III Baryon Oscillation Spectroscopic Survey: The quasar luminosity function from data release nine, *Astrophys. J.* **773**, 14 (2013) arXiv:1210.6389 [astro-ph.CO].
35. Lan Zhang, Hans-Walter Rix, Glenn van de Ven, **Jo Bovy**, Chao Liu, & Gang Zhao, The gravitational potential near the Sun from SEGUE K-dwarf kinematics, *Astrophys. J.* **772**, 108 (2013) arXiv:1209.0256 [astro-ph.GA].
34. Hans-Walter Rix & **Jo Bovy**, The Milky Way's stellar disk: mapping and modeling the Galactic disk, *Astron. Astrophys. Rev.* **21**, 61 (2013) arXiv:1301.3168 [astro-ph.GA].
33. Anže Slosar, et al., Measurement of baryon acoustic oscillations in the Lyman-alpha forest fluctuations in BOSS Data Release 9, *J. Cosmol. Astropart. Phys.* **4**, 26 (2013) arXiv:1301.3459 [astro-ph.CO].
32. Nicolás G. Busca, et al., Baryon Acoustic Oscillations in the Ly α forest of BOSS quasars, *Astron. & Astrophys.* **552**, A96 (2013) arXiv:1211.2616 [astro-ph.CO].
31. **Jo Bovy** & Cora Dvorkin, Low-mass suppression of the satellite luminosity function due to the supersonic baryon-cold-dark-matter relative velocity, *Astrophys. J.* **768**, 70 (2013) arXiv:1205.2083 [astro-ph.CO].
30. Deokkeun An, Timothy C. Beers, Jennifer A. Johnson, Marc H. Pinsonneault, Young Sun Lee, **Jo Bovy**, Željko Ivezić, Daniela Carollo, & Matthew Newby, The stellar metallicity distribution function of the Galactic halo from SDSS photometry, *Astrophys. J.* **763**, 65 (2013) arXiv:1211.7073 [astro-ph.GA].
29. Kyle S. Dawson, et al., The Baryon Oscillation Spectroscopic Survey of SDSS-III, *Astron. J.* **145**, 10 (2013) arXiv:1208.0022 [astro-ph.CO].
28. Isabelle Pâris, et al., The Sloan Digital Sky Survey quasar catalog: ninth data release, *Astron. & Astrophys.* **548**, 66 (2012) arXiv:1210.5166 [astro-ph.CO].

27. **Jo Bovy** et al., The Milky Way's circular velocity curve between 4 and 14 kpc from APOGEE data, *Astrophys. J.* **759**, 131 (2012) arXiv:1209.0759 [astro-ph.GA].
26. Christopher P. Ahn, et al., The ninth data release of the Sloan Digital Sky Survey: first spectroscopic data from the SDSS-III Baryon Oscillation Spectroscopic Survey, *Astrophys. J. Supp.* **203**, 21 (2012) arXiv:1207.7137 [astro-ph.IM].
25. **Jo Bovy** & Scott Tremaine, On the local dark matter density, *Astrophys. J.* **756**, 89 (2012) arXiv:1205.4033 [astro-ph.GA].
24. **Jo Bovy**, Hans-Walter Rix, David W. Hogg, Timothy C. Beers, Young Sun Lee, & Lan Zhang, The vertical motions of mono-abundance sub-populations in the Milky Way disk, *Astrophys. J.* **755**, 115 (2012) arXiv:1202.2819 [astro-ph.GA].
23. Martin White, et al., The clustering of intermediate redshift quasars as measured by the Baryon Oscillation Spectroscopic Survey, *Mon. Not. Roy. Astron. Soc.* **424**, 933 (2012) arXiv:1203.5306 [astro-ph.CO].
22. **Jo Bovy**, Hans-Walter Rix, Chao Liu, David W. Hogg, Timothy C. Beers, & Young Sun Lee, The spatial structure of mono-abundance sub-populations of the Milky Way disk, *Astrophys. J.* **753**, 148 (2012) arXiv:1111.1724 [astro-ph.GA].
21. **Jo Bovy**, Hans-Walter Rix, & David W. Hogg, The Milky Way has no distinct thick disk, *Astrophys. J.* **751**, 131 (2012) arXiv:1111.6585 [astro-ph.GA].
20. **Jo Bovy**, et al., Photometric redshifts and quasar probabilities from a single, data-driven generative model, *Astrophys. J.* **749**, 41 (2012) arXiv:1105.3975 [astro-ph.CO].
19. Nicholas P. Ross, Adam D. Myers, Erin S. Sheldon, Christophe Yèche, Michael A. Strauss, **Jo Bovy**, et al., The *SDSS-III* Baryon Oscillation Spectroscopic Survey: Quasar target selection for Data Release Nine, *Astrophys. J. Supp.* **199**, 3 (2012) arXiv:1105.0606 [astro-ph.CO].
18. Daniela Carollo, Timothy C. Beers, **Jo Bovy**, et al., Carbon-enhanced metal-poor stars in the inner and outer halo components of the Milky Way, *Astrophys. J.* **744**, 195 (2012) arXiv:1103.3067 [astro-ph.GA].
17. Kasper B. Schmidt, Hans-Walter Rix, Joseph C. Shields, Matthias Knecht, David W. Hogg, Dan Maoz, & **Jo Bovy**, The color variability of quasars, *Astrophys. J.* **744**, 147 (2012) arXiv:1109.6653 [astro-ph.CO].
16. Daniel J. Eisenstein, et al., *SDSS-III*: Massive spectroscopic surveys of the distant Universe, the Milky Way Galaxy, and extra-solar planetary systems, *Astron. J.* **142**, 72 (2011) arXiv:1101.1529 [astro-ph.IM].
15. Dmitry Malyshev, **Jo Bovy**, & Ilias Cholis, Spherical harmonics analysis of Fermi gamma-ray data and the Galactic dark matter halo, *Phys. Rev. D* **84**, 023013 (2011) arXiv:1007.4556 [astro-ph].
14. **Jo Bovy**, David W. Hogg, & Sam T. Roweis, Extreme deconvolution: inferring complete distribution functions from noisy, heterogeneous and incomplete observations, *Ann. Appl. Stat.* **5**, 2B, 1657 (2011) arXiv:0905.2979 [stat.ME].
13. Hiroaki Aihara, et al., The eighth data release of the Sloan Digital Sky Survey: first data from SDSS-III, *Astrophys. J. Supp.* **193**, 29 (2011) arXiv:1101.1559 [astro-ph]; Erratum *Astrophys. J. Supp.* **195**, 26 (2011).
12. **Jo Bovy**, et al., Think outside the color box: probabilistic target selection and the *SDSS-XDQSO* quasar targeting catalog, *Astrophys. J.* **729**, 141 (2011) arXiv:1011.6392 [astro-ph].
11. David W. Hogg, Adam D. Myers, & **Jo Bovy**, Inferring the eccentricity distribution, *Astrophys. J.* **725**, 2166 (2010) arXiv:1008.4146 [astro-ph].
10. **Jo Bovy**, Tracing the Hercules stream around the Galaxy, *Astrophys. J.* **725**, 1676 (2010) arXiv:1006.0736 [astro-ph].
9. **Jo Bovy** & David W. Hogg, The velocity distribution of nearby stars from Hipparcos data II. The nature of the low-velocity moving groups, *Astrophys. J.* **717**, 617 (2010) arXiv:0912.3262 [astro-ph].
8. **Jo Bovy**, Iain Murray, & David W. Hogg, Dynamical inference from a kinematic snapshot: The force law in the Solar System, *Astrophys. J.* **711**, 1157 (2010) arXiv:0903.5308 [astro-ph].
7. **Jo Bovy**, David W. Hogg, & Hans-Walter Rix, Galactic masers and the Milky Way circular velocity, *Astrophys. J.* **704**, 1704 (2009) arXiv:0907.5423 [astro-ph].
6. **Jo Bovy**, David W. Hogg, & Sam T. Roweis, The velocity distribution of nearby stars from Hipparcos data

- I. The significance of the moving groups, *Astrophys. J.* **700**, 1794 (2009) arXiv:0905.2980 [astro-ph].
5. **Jo Bovy**, Substructure boosts to dark matter annihilation from Sommerfeld enhancement, *Phys. Rev. D* **79**, 083539 (2009) arXiv:0903.0413 [astro-ph].
 4. Surhud More, **Jo Bovy**, & David W. Hogg, Cosmic transparency: A test with the baryon acoustic feature and type Ia supernovae, *Astrophys. J.* **696**, 1727 (2009) arXiv:0810.5553 [astro-ph].
 3. **Jo Bovy** & Glennys R. Farrar, Connection between a possible fifth force and the direct detection of dark matter, *Phys. Rev. Lett.* **102**, 101301 (2009) arXiv:0807.3060 [hep-ph].
 2. **Jo Bovy**, David W. Hogg, & John Moustakas, The transparency of galaxy clusters, *Astrophys. J.* **688**, 198 (2008) arXiv:0805.1200 [astro-ph].
 1. **Jo Bovy**, Dieter Lüst, & Dimitrios Tsimpis, $N = 1, 2$ Supersymmetric vacua of *IIA* supergravity and $SU(2)$ structures, *J. High Energy Phys.* **08**, 056 (2005) arXiv:hep-th/0506160.

COMPUTER SCIENCE WORKSHOP PAPERS

2. Nolan Koblischke & **Jo Bovy**, SpectraFM: Tuning into stellar foundation models, *NeurIPS 2024 Workshop on Foundation Models for Science*, in press (2024) arXiv:2411.04750 [astro-ph.IM].
1. Henry W. Leung, **Jo Bovy**, & Joshua S. Speagle, Estimating Probability Densities with Transformer and Denoising Diffusion, *ICML 2024 Workshop on Foundation Models in the Wild*, in press (2024) arXiv:2407.15703 [cs.LG].

PUBLICATIONS IN PREPARATION

- Euclid Collaboration: M. Walmsley, et al., Euclid Quick Data Release (Q1): First visual morphology catalogue, *Astron. & Astrophys.*, submitted (2025) arXiv:2503.15310 [astro-ph.GA].
- Euclid Collaboration: M. Walmsley, et al., Euclid Quick Data Release (Q1): The Strong Lensing Discovery Engine A – System overview and lens catalogue, *Astron. & Astrophys.*, submitted (2025) arXiv:2503.15324 [astro-ph.GA].

UNREFEREED PUBLICATIONS

- Jo Bovy**, A purely acceleration-based measurement of the fundamental Galactic parameters (2020) arXiv:2012.02169 [astro-ph.GA].
- Alex Drlica-Wagner, Yao-Yuan Mao, Susmita Adhikari, Robert Armstrong, Arka Banerjee, Nilanjan Banik, Keith Bechtol, Simeon Bird, Kimberly K. Boddy, Ana Bonaca, **Jo Bovy**, et al., Probing the Fundamental Nature of Dark Matter with the Large Synoptic Survey Telescope (2019) arXiv:1902.01055 [astro-ph.CO].
- MSE Science Team, The Detailed Science Case for the Maunakea Spectroscopic Explorer, 2019 edition (2019) arXiv:1904.04907 [astro-ph.IM].
- Juna A. Kollmeier, Gail Zasowski, Hans-Walter Rix, et al., SDSS-V: Pioneering Panoptic Spectroscopy (2017) arXiv:1711.03234 [astro-ph.GA].
- J. Ted Mackereth, **Jo Bovy**, Ricardo P. Schiavon, & the SDSS-IV/APOGEE Collaboration, The age-metallicity structure of the Milky Way disc with APOGEE, in *Rediscovering our Galaxy*, eds. C. Chiappini, I. Minchev, E. Starkeburg, M. Valentini, Proceedings of the International Astronomical Union, IAU Symposium, **334** (2017) arXiv:1708.05399 [astro-ph.GA].
- Alan McConnachie, Carine Babusiaux, Michael Balogh, Simon Driver, Pat Côté, Helene Courtois, Luke Davies, Laura Ferrarese, Sarah Gallagher, Rodrigo Ibata, Nicolas Martin, Aaron Robotham, Kim Venn, Eva Villaver, **Jo Bovy**, et al., The Detailed Science Case for the Maunakea Spectroscopic Explorer: the Composition and Dynamics of the Faint Universe (2016) arXiv:1606.00043 [astro-ph.IM].
- Jo Bovy**, What drives the evolution of the Milky Way’s disk?, in *The Milky Way Unravalled by Gaia: GREAT Science from the Gaia Data Releases*, eds. N. A. Walton, F. Figueras, L. Balaguer-Núñez and

C. Soubiran, EAS Publications Series, **67–68**, 331 (2014) DOI.

Jo Bovy, Constraining dynamical models with observational data, in Setting the scene for Gaia and LAMOST, Proceedings of the International Astronomical Union, IAU Symposium, **298**, 185 (2014) DOI.

David W. Hogg, **Jo Bovy**, & Dustin Lang, Data analysis recipes: Fitting a model to data (2010) arXiv:1008.4686 [astro-ph].

Jo Bovy, The self-energy of the electron: a quintessential problem in the development of QED (2006) arXiv:physics/0608108.

MISCELLANEOUS

Large variety of research code available on GitHub: <http://github.com/jobovy>, e.g.,

Jo Bovy, 2010–current, *galpy* Galactic dynamics codebase, BSD license (<http://github.com/jobovy/galpy>; <http://galpy.readthedocs.org/en/latest/>).

Jo Bovy, 2012–current, *apogee* Very general set of tools for dealing with APOGEE high-resolution spectroscopic data and generating synthetic spectra, BSD license (<http://github.com/jobovy/apogee>).

Jo Bovy, David W. Hogg, & Sam Roweis, 2009, *extreme-deconvolution* codebase, BSD license, (<http://github.com/jobovy/extreme-deconvolution>).

TEACHING EXPERIENCE

University of Toronto:

AST1501/1500: Introduction to Research (graduate; Fall/Winter/Summer 2023-2024; 2024-2025)

AST3100: Mini-course on code development and packaging (graduate; Winter 2020)

AST299: Research Opportunity Program (undergraduate; Summer 2018)

AST1420: Galactic Structure and Dynamics (graduate; Fall 2017, Fall 2018; Fall 2020, Winter 2024)

AST3100: Mini-course on Statistics and Inference in Astrophysics (graduate; Winter 2016, Winter 2018)

AST222: Galaxies and Cosmology (undergraduate; Winter 2016, Winter 2018, Winter 2019)

PMU199: Great Astronomical Issues (undergraduate; Fall 2015)

Summer schools:

Lecturer, Petnica Summer Institute Summer School on Astrophysics and Astroparticles, Serbia, 2015

Three lectures on *galaxies*

Lecturer, SLAC Summer Institute “Shining Light on Dark Matter”, 2014

Lecture: *Dark matter in the Milky Way*

Invited Speaker and Teaching Assistant, International Max Planck Research School for Astronomy and Cosmic Physics at the University of Heidelberg (IMPRS-HD), 2009

Topic: *Statistical Inferences from Astrophysical Data*

Science talk “Inference in action: the force law in the Solar System” and preparation and assistance of lab exercises at a summer school aimed at graduate students and postdocs

TALKS

list available upon request