

Jason F. Rowe, Ph.D.

Canada Research Chair in Exoplanet Astrophysics

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Profile

Astrophysicist and research leader with twenty years of experience extracting scientific discovery from large space-mission archives – Kepler, K2, JWST, and Canada's NEOSSat, Pandora, and Roman contributions. Combines a deep research record in statistical and computational methods for massive time-series datasets with recent senior administrative experience: department chair, budget and personnel management, government contract oversight, and government-facing science-policy leadership for the Canadian astronomical community. Strong organizational, planning, and time-management skills developed managing multi-institution technical programs alongside a full departmental teaching and budget portfolio. Author or co-author of 410+ refereed papers (H-index 92, ~32,000 citations).

Education

- 2008 **Ph.D., Physics and Astronomy**, *University of British Columbia*, Vancouver, BC, Canada
Thesis: *An Upper Limit on the Albedo of HD 209458b: Direct Imaging Photometry with the MOST Satellite*.
Advisor: Jaymie Matthews.
- 2003 **M.Sc., Astronomy**, *University of British Columbia*, Vancouver, BC, Canada
Thesis: *The Nature of M33's AGB Stars*. Advisor: Harvey Richer.
- 2000 **B.Sc., Physics and Astronomy**, *University of Toronto*, Toronto, ON, Canada
Thesis: *CCD Observations of RR Lyrae Variables in Globular Clusters*. Advisor: Christine Clement.

Academic Appointments

- 2017–present **Canada Research Chair, Exoplanet Astrophysics (Tier 2)**, *Bishop's University*, Sherbrooke, QC
- 2021–present **Full Professor**, *Bishop's University*, Sherbrooke, QC
- 2019–2021 **Associate Professor**, *Bishop's University*, Sherbrooke, QC
- 2017–2019 **Assistant Professor**, *Bishop's University*, Sherbrooke, QC
- 2011–present **Principal Investigator**, *SETI Institute*, Mountain View, CA
- 2015–2017 **JWST NIRISS/FGS Research Scientist**, *Université de Montréal*, Montréal, QC
Data-reduction pipeline development for the CSA-built NIRISS instrument.
- 2010–2015 **Kepler Science Office**, *NASA Ames Research Center*, Moffett Field, CA
Kepler Mission transit scientist; validation of 800+ transiting exoplanets.
- 2007–2010 **NASA Postdoctoral Program Fellow**, *NASA Ames Research Center*, Moffett Field, CA

Leadership & Administration

- 2022–2025 **Department Chair**, *Dept. of Physics and Astronomy, Bishop's University*
Managed the department's full operating budget – salaries for full-time and part-time faculty, faculty professional-development funds, and lab/equipment budgets and procurement – while overseeing scheduling and delivery of ~20 courses annually to ~200 undergraduate and graduate students. Restructured graduate course offerings (cross-listed 400/500-level courses), increasing tuition revenue and eliminating ad hoc one-on-one graduate teaching. Reorganized upper-year (3rd/4th-year) course scheduling onto a two-year rotation, grouping cohorts across year levels to cut course-preparation costs and save substantial departmental resources while still ensuring students graduate on time with full training. Corrected a provincial compensation misclassification undervaluing departmental course offerings.
- 2021–2025 **Co-Chair**, *Joint Committee for Space Astronomy (JCSA)*
Principal advisory body between the Canadian astronomical community and the Canadian Space Agency (CSA). Drafted government funding-priority recommendations and authored public biannual reports on the state of Canadian space astronomy.

- 2023 Community Lead (Exoplanets) & Section Author, *Science Community Topical Teams 2023 Report on Space Astronomy, Planetary Science and Astronaut Health* – led the exoplanets topical team and authored Section 4 (Exoplanets) of this CSA community-priorities report, produced by 400+ experts from 35 organizations.
- 2023–present **Member, CASCA/ACURA TMT Advisory Committee (CATAC)**
Advises the federal government on Canada's \$200M investment in the Thirty Meter Telescope; liaises with project leadership, government, and Native Hawaiian community representatives.
- 2022–present **Board Member & Institutional Representative, Association of Canadian Universities for Research in Astronomy (ACURA)**
Represents Bishop's University on a board of VPs of Research, university presidents, and industry representatives lobbying for federal funding of large-scale Canadian astronomy projects (e.g., SKA, CASTOR).
- 2022–2025 **Member, Bishop's University Parity Committee**
Negotiated a new collective-bargaining-agreement provision protecting full-time faculty research time against teaching load, ultimately ratified by both the faculty union and the university. Built full costing models balancing teaching load and relief against research programs, overheads, and infrastructure to produce a fair, budget-balanced workload framework – against a backdrop of provincial funding cuts to Quebec's English-language universities. Developed deep working knowledge of public and private research funding structures and institutional cost accounting.
- 2022–2025 Bishop's University Research Space Committee – audited and evaluated campus research-space needs.
- 2022, 2024 Bishop's University Faculty Council Appeals Committee (two terms).
- 2025–present Bishop's University Prizes Committee.
- People management Directly supervises project managers on the POET, Pandora, and Roman efforts across Bishop's and partner institutions.

Space Mission Leadership

- POET Principal Investigator – Canadian smallsat exoplanet telescope; directed a \$1.2M CAD payload-concept and prototyping contract with Public Services and Procurement Canada (PSPC) / the Canadian Space Agency (CSA) Space Technology Development Program – the largest government contract held by Bishop's University – spanning Bishop's, Western University, and industry partners ABB and SFL. Personally responsible for full PSPC/CSA compliance and reporting (see Risk, Compliance & Contract Management, below).
- CASTOR Exoplanet Science Lead – developed the mission's exoplanet science case, produced exoplanet-driven mission requirements, and conducted detector testing to establish CASTOR's impact on exoplanet science as a large-aperture UV instrument.
- Roman Co-Investigator, international Community program *Transiting Planets in the Galactic Bulge Time Domain Survey* (PI R. Wilson, Univ. of Maryland; Co-Is from STScI, NASA Goddard, JPL, Caltech/IPAC, and others), valued at \$1.2M USD; lead the Canadian team's contribution and am adapting the `b1s_cuda` GPU-accelerated detection framework as its core transit-search code for a survey expected to discover up to 100,000 new exoplanets. Continuing focus of my self-directed research program.
- Pandora Co-Investigator, supported by a CSA ROSS grant (2023–2026, renewed 2026–2028); run the mission's Auxiliary Science Program – community target selection, stellar characterization, and target-list curation.
- NIRPS Guaranteed Time Observations (GTO) team member.
- JWST NIRISS instrument team – data-reduction pipeline and simulation software development (2015–2017); ongoing NIRISS science team member.
- NEOSSat Science team; software development; joint mission with Defence Research and Development Canada (DRDC) – see Risk, Compliance & Contract Management, below.
- Kepler / K2 Science Office; Participating Scientist; led recomputation of the DR25 planet catalog (updated Gaia-based stellar parameters, new Bayesian false-positive framework).
- MOST / BRITE Science team member.

Risk, Compliance & Contract Management

Government contract oversight	As PI of the \$1.2M CAD POET payload contract – Bishop's University's largest-ever government contract – held full responsibility for PSPC/CSA compliance: milestone-gated Performance Evaluation Criteria (PEC) reviews, Technology Readiness Level (TRL) advancement and reporting, work-breakdown-structure and financial/accounting reporting, and disclosure of Background and Foreground Intellectual Property (BIP/FIP).
Risk mitigation & cost optimization	When the COVID-era global parts shortage put procurement of long-lead optical components (mirrors, test equipment) at risk of breaching budget and schedule, descoped detector-electronics breadboarding to an on-paper design study, preserving the funding needed to complete full Optical Telescope Assembly (OTA) testing on time and on budget. The resulting OTA design was subsequently commercialized and adopted for reuse on another Canadian space mission.
Export control & security	Led Bishop's University's first-ever enrollment in Canada's Controlled Goods Program and developed the university's first campus security plan, both required for NEOSSat, a joint mission with Defence Research and Development Canada (DRDC).

Research Funding

2023–2027	Canada Research Chair, Exoplanet Astrophysics – \$500K CAD
2024–2028	NSERC Discovery Grant: <i>A New Era of Exoplanet Astrophysics</i> – \$160K CAD
2021–2022	CSA Space Technology Development Program: POET payload concept – \$1.2M CAD (with industry & university partners)
2023–2028	CSA ROSS Program: Pandora Mission Co-Investigator – \$150K CAD (2023–2026, renewed 2026–2028)
2026	CFI John R. Evans Leaders Fund: <i>The Discovery and Characterization of One Hundred Thousand Transiting Exoplanets</i> – \$29,076 CAD (plus matching provincial funds); GPU compute nodes for Roman transit-search work
2025–2026	Digital Research Alliance of Canada, Resources for Research Groups (Fast-Track #3300): <i>Discovery and Characterization of Extrasolar Planets</i> – 2,408 core-years (<i>rorqual</i> -compute) and 100 TB storage (<i>rorqual</i> -storage), valued at ~\$270K CAD
2017–2023	NSERC Discovery Grant: <i>Determining What Makes a Planet Earth-like</i> – \$125K CAD
2017	CFI Grant: <i>Determining What Makes a Planet Earth-like</i> – \$400K CAD
2018–2019	CSA Science Maturation Study: Photometric Observations of Transiting Extrasolar Planets – \$150K CAD
2018–2021	FQRNT New University Researchers Startup Program – \$40K CAD
2017–2022	FQRNT Regroupement Stratégique: Centre de Recherche en Astrophysique du Québec (CRAQ)

Data Science, Software & Technical Skills

Languages	Python (NumPy, SciPy, Astropy), C, Fortran (77/90+), Verilog
Statistical methods	MCMC, Gaussian processes, nested sampling, and Bayesian inference for demographic-scale exoplanet population studies
Pipelines	Kepler/K2 transit-search and light-curve validation codes (community standard, used in the DR25 catalog); ATOCA algorithm contributions for JWST NIRISS SOSS spectral extraction; TESS vetting tools
Data engineering	Large-scale reanalysis and reprocessing of mission catalogs (Kepler DR25); design of ML/statistical classification frameworks for petabyte-scale transit surveys (Roman)
Infrastructure	Personally administer on-campus research computing: Proxmox virtualization cluster, pfSense firewall, TrueNAS backup and NFS storage, a JupyterHub server for local and remote collaborators, and a GPU server for CUDA benchmarking; hold a Digital Research Alliance of Canada Resources for Research Groups allocation (2,408 core-years, 100 TB storage; see Research Funding)

Key Research Software (Open Source)

bls_cuda	GPU-accelerated Box-Least-Squares transit-search code; forms the core detection and characterization framework being adopted for the Nancy Grace Roman Space Telescope's search for up to 100,000 new exoplanets.
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- Kepler Transit-modeling and light-curve validation codebase used to construct and vet NASA's DR25 Kepler planet candidate catalog, the community standard for exoplanet demographics.
- neossat Photometric data-reduction pipeline developed to demonstrate and enable astrophysical science with Canada's NEOSat satellite.
- MOST Photometric reduction pipeline for Canada's MOST space telescope, used for early-career exoplanet and asteroseismology research.
- Also see github.com/jasonfrowe – 12+ additional public repositories, including Kepler_TTV, autotransit, poet, and JWST/NIRISS data-reduction tools (e.g. ATOCA).

Teaching & Mentorship

- Courses developed PHY325 Computational Physics (Python-based numerical methods); PHY487/587 Exoplanet Astrophysics (cross-listed undergraduate/graduate)
- Regular teaching PHY113 Introduction to Astronomy; PHY214 Astrophysics; PHY580/581 Graduate Seminar (revamped curriculum and grading, pro bono, 2020–present)
- Assessment design Redesigned course assessment to preserve academic integrity in the LLM era, shifting weight toward term projects, constrained problem design, and in-class evaluation
- HQP training Supervises undergraduate, graduate (M.Sc./Ph.D.), and postdoctoral trainees; several have led first-author publications from JWST and Kepler data (D. Lizotte, J. Sikora, M. Matesic). Regularly hosts USRA and Trottier/iREx summer interns and mentors Cégep students through the *Cheminement recherche-études* program.

Selected Publications

- Bibliometrics 410+ refereed publications; H-index = 92; ~32,000 citations; consistently ranked among the top-10 most-cited astrophysicists in Canada and top-100 internationally (source: ADS/Google Scholar).

Selected recent and landmark papers

- 2025 Lizotte, D.-A., **Rowe, J.**, Sikora, J., & Matesic, M. AJ, 170, 128. *Exoplanet Atmospheric Refraction Effects in the Kepler Sample*.
- 2025 Sikora, J., **Rowe, J.F.**, Splinter, J., et al. AJ, 170, 105. *Seasonal Changes in the Atmosphere of HD 80606b Observed with JWST's NIRSpec/G395H*.
- 2025 Morel, K., Coulombe, L.-P., **Rowe, J.F.**, et al. AJ, 169, 277. *A Moderate Albedo from Reflecting Aerosols on the Dayside of WASP-80b Revealed by JWST/NIRISS*.
- 2024 Lissauer, J.J., **Rowe, J.F.**, Jontof-Hutter, D., et al. PSJ, 5, 152. *Updated Catalog of Kepler Planet Candidates: Focus on Accuracy and Orbital Periods*. (DR25 recomputation)
- 2024 Matesic, M.R.B., **Rowe, J.F.**, Livingston, J.H., et al. AJ, 167, 68. *Gaussian Processes and Nested Sampling Applied to Kepler's Small Long-period Exoplanet Candidates*.
- 2023 Doyon, R., Willott, C.J., Hutchings, J.B., . . . , **Rowe, J.F.**, et al. PASP, 135, 098001. *The Near Infrared Imager and Slitless Spectrograph for JWST. I. Instrument Overview and In-flight Performance*.
- 2022 **Rowe, J.F.**, Metchev, S., Hoffman, K.L., et al. Proc. SPIE, 12180, 121800A. *The POET mission: a Canadian space telescope for exoplanet astrophysics*.
- 2020 Gilbert, E.A., et al. AJ, 160, 116. *The First Habitable-zone Earth-sized Planet from TESS*.
- 2015 **Rowe, J.F.** et al. ApJS, 217, 16. *Planetary Candidates Observed by Kepler, V: Planet Sample from Q1–Q12*.
- 2014 **Rowe, J.F.**, Bryson, S.T., Marcy, G.W., Lissauer, J.J., et al. ApJ, 784, 45. *Validation of Kepler's Multiple Planet Candidates. III*. (800+ planets validated)
- 2013 Borucki, W.J., Agol, E., Fressin, F., . . . , **Rowe, J.**, et al. Science, 340, 587. *Kepler-62: A Five-Planet System with Planets in the Habitable Zone*.
- 2011 Batalha, N.M., et al. ApJ, 729, 27. *Kepler's First Rocky Planet: Kepler-10b*.
- 2008 **Rowe, J.F.**, et al. ApJ, 689, 1345. *The Very Low Albedo of an Extrasolar Planet: MOST Space-based Photometry of HD 209458*.

Full publication list available at NASA ADS or upon request.

Selected Invited Talks

- 2026 *Finding 100,000 Transiting Exoplanets with Roman*, Sagan Summer Workshop, NASA Exoplanet Science Institute/Caltech (invited). Covered the Kepler-to-Roman transit-search heritage and ongoing TESS work; data pre-conditioning and volume handling for Roman-scale archives; the practical tradeoffs between cloud platforms and university research-computing networks for peta-scale data; community software; and the underlying detection-statistics theory.
- 2025 *Building a Space Telescope: The Pandora and POET Missions*, Canadian Astronomical Society (CASCA) Annual Meeting, Saint Mary's University (invited). Used the Pandora and POET smallsat missions as case studies of the space-telescope development lifecycle – conceptual design through launch and operations – with a focus on interdisciplinary collaboration, engineering problem-solving, and project management for Canadian teams working in optics, detector technology, and spacecraft operations.

Awards & Honors

- 2011, 2016 NASA Exceptional Scientific Achievement Medal (twice-awarded)
- 2019 Emerging Scholar Award, Bishop's University
- 2017–2028 Canada Research Chair, Tier 2 (awarded 2017; renewed 2023)
- Honor Minor planet 2007 LP₃₀ named *Jasonrowe* in recognition of contributions to exoplanet science

Public Engagement & Media

- 2026 Canada's role in the Nancy Grace Roman Space Telescope, including my group's contribution, covered by *La Presse*, CBC News, CBC Radio's *As It Happens*, and *The Globe and Mail*.
- 2024 Led press release and data-sonification video for the discovery of the Kepler-385 seven-planet resonance-chain system; coverage by CBC, *The New York Times*, *The Washington Post*, *USA Today*, and *The Globe and Mail*; 38,000+ YouTube views in the first week.
- Ongoing Regular contributor to national print, radio, and online media on exoplanet science; volunteer instructor for exoplanet mini-courses at universities across Québec.

Professional Service

- Peer review Referee for *Nature*, *Astrophysical Journal*, *Astronomical Journal*, *Astronomy & Astrophysics*, *MNRAS*; as a referee for AAS journals, operate under and apply their author and referee LLM-use guidelines in practice
- Panels Annual NASA senior mission/proposal review panels; NSERC and NRC grant review panels; conference SOC member
- Memberships Canadian Astronomical Society (CASCA); American Astronomical Society (AAS); Trottier Institute for Research on Exoplanets (iREx); AstroQuébec

References

Available upon request.