



## Jonathan Gagné

### Curriculum Vitae

Planétarium Rio Tinto Alcan  
Espace pour la Vie  
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## PROFESSIONAL APPOINTMENTS

- 2020 – Scientific Advisor, Planétarium Rio Tinto Alcan
- 2018 Banting Fellow, iREx
- 2015 NASA Sagan Fellow, Carnegie Institution for Science
- 2015 Trottier Postdoctoral Fellow of iREx
- 2014 IPAC Visiting Graduate Fellow, California Institute of Technology

## EDUCATION

- Ph.D. Physics, Université de Montréal, 2015  
Dissertation: *The Search for Brown Dwarfs and Low-Mass Stars in Young Kinematic Associations of the Solar Neighborhood* (translated from French)  
[Link to dissertation](#)  
Dean's honor list – 2015
- B.S. Physics, Université de Montréal, 2010  
Dean's honor list – 2008, 2009, 2010

## AWARDS & FELLOWSHIPS

- 2019 69th Lindau Nobel Laureates Meeting prize invitation (declined)
- 2018 Banting Postdoctoral Fellowship of Canada

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2018	Trottier Postdoctoral Fellowship or iREx (partly declined)
2017	NASA Group Achievement Award for the “development and tests at Mauna Kea observatories of a near-infrared Laser Frequency Comb as a wavelength standard for the detection and characterization of exoplanets”
2016	Association des Doyens des Études Supérieures au Québec Excellence Prize for best 2016 Science & Engineering Ph.D. thesis in Québec
2016	J. S. Plaskett Medal of the Canadian Astronomical Society / Royal Astronomical Society of Canada for best 2015-2016 Canadian Ph.D. thesis in astronomy or astrophysics
2015	NASA Sagan Fellowship
2015	NASA Hubble Fellowship (declined)
2015	Trottier Postdoctoral Fellowship of iREx
2015	Natural Sciences and Engineering Research Council of Canada Postdoctoral Fellowship of Canada
2015	Fonds de Recherche du Québec - Nature et Technologies Postdoctoral Research Scholarship of Quebec (declined)
2014	Fonds de Recherche du Québec - Nature et Technologies Ph.D. research scholarship of Quebec
2014	Infrared Processing and Analysis Center - Caltech Graduate Fellowship
2011	Natural Sciences and Engineering Research Council of Canada Alexander-Graham-Bell Ph.D. scholarship of Canada
2011	Université de Montréal Physics Department Excellence Award
2010	Natural Sciences and Engineering Research Council of Canada Alexander-Graham-Bell Masters scholarship of Canada
2010	Fonds de Recherche du Québec - Nature et Technologies Research Graduate Scholarship of Quebec
2010	Université de Montréal Physics Department Scholarship for Direct Transition to Ph.D.

## PUBLICATIONS

### Peer-Reviewed Journal Articles

Total: **60**, first-author: **15**, h-index: **25**, peer-reviewed citations: **1756**, RIQ-index: **0.194** (Source ADS), ORCID: 0000-0002-2592-9612.

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- 2020 Faherty, J. K.; (5 authors); **Gagné, J.** et al. “WISE2150-7520AB: A Very Low Mass, Wide Co-Moving Brown Dwarf System Discovered Through the Citizen Science Project Backyard Worlds: Planet 9”. *Astrophys. J.*, 889, 176
- 2019 Gonzales, E. C.; Faherty, J. K.; **Gagné, J.** et al. “A Reanalysis of the Fundamental Parameters and Age of TRAPPIST”. *Astrophys. J.*, 886, 131
- 2019 Baron, F.; Lafrenière, D.; Artigau, É.; **Gagné, J.** et al. “Constraints on the Occurrence and Distribution of 1–20  $M_{\text{Jup}}$  Companions to Stars at Separations of 5–5000 AU from a Compilation of Direct-Imaging Surveys”. *Astrophys. J.*, 158, 187
- 2019 Cale, B.; Plavchan, P.; LeBrun, D.; **Gagné, J.** et al. “Precise Radial Velocities of Cool Low-Mass Stars with iSHELL”. *Astron. J.*, 158, 170
- 2019 Bardalez Gagliuffi, D. C.; (3 authors); **Gagné, J.** et al. “The Ultracool Spextroscopic Survey. I. Volume-Limited Spectroscopic Sample and Luminosity Function of M7-L5 Ultracool Dwarfs”, *Astrophys. J.*, 883, 205
- 2019 David, T. J.; (10 authors); **Gagné, J.** et al. “A Warm Jupiter-Sized Planet Transiting the Pre-Main Sequence Star V1298 Tau”, *Astron. J.*, 158, 79
- 2019 Huber, D.; (several authors); **Gagné, J.** et al. “A Hot Saturn Orbiting an Oscillating Late Subgiant Discovered by TESS”. *Astron. J.*, 157, 245
- 2019 Debes, J. H.; (5 authors); **Gagné, J.** et al. “A 3 Gyr White Dwarf with Warm Dust Discovered via the Backyard Worlds: Planet 9 Citizen Science Project”. *Astrophys. J. Letters*, 872, L25
- 2018 Faherty, J. K.; **Gagné, J.**; Burgasser, A. J. et al. “A Late-type L Dwarf at 11 pc Hiding in the Galactic Plane Characterized Using Gaia DR2”. *Astrophys. J.*, 868, 44
- 2018 **Gagné, J.**; Faherty, J. K.; Mamajek, E. E. “Volans-Carina: A New Association of Stars Coeval with the Pleiades at 85 pc”. *Astrophys. J.*, 865, 2
- 2018 Gonzales, E. C.; Faherty, J. K.; **Gagné, J.** and Artigau, É. “Understanding Fundamental Properties and Atmospheric Features of Subdwarfs via a Case Study of SDSS J125637.13-022452.4” *Astrophys. J.*, 864, 100
- 2018 Dieterich, S. B.; (4 authors); **Gagné, J.** et al. “Dynamical Masses of  $\epsilon$  Indi B and C: Two Massive Brown Dwarfs at the Edge of the Stellar-Substellar Boundary”. *Astrophys. J.*, 865, 28
- 2018 **Gagné, J.**; Fontaine, G.; Simon, A. et al. “A Young Ultramassive White Dwarf in the AB Doradus Moving Group”. *Astrophys. J. Letters*, 861, 13

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- 2018 Baron, F.; (3 authors); **Gagné, J.** et al. "WEIRD: Wide-Orbit Exoplanet serach with InfraRed Direct Imaging". *Astron. J.*, 156, 137
- 2018 Faherty, J. K.; Bochanski, J. J.; **Gagné, J.** et al. "New and Known Moving Groups And Clusters Identified in a Gaia Co-Moving Catalog". *Astrophys. J.*, 863, 91
- 2018 **Gagné, J.**; Faherty, J. K. "BANYAN. XIII. A First Look at Nearby Young Associations with *Gaia* Data Release 2". *Astrophys. J.*, 862, 2
- 2018 **Gagné, J.**; Loubier, O.; Faherty, J. K. et al. "BANYAN. XII. New Members of Nearby Young Associations from *Gaia*-Tycho Data". *Astrophys. J.*, 860, 1
- 2018 **Gagné, J.**; Mamajek, E. E.; Malo, L. et al. "BANYAN. XI. The BANYAN  $\Sigma$  Multivariate Bayesian Algorithm to Identify Members of Young Associations Within 150 pc". *Astrophys. J.*, 856, 23.
- 2018 **Gagné, J.**; Allers, K.; Theissen, C. A. et al. "2MASS J13243553+6358281 is an Early T-Type Planetary-Mass Object in the AB Doradus Moving Group". *Astrophys. J. Letters*, 854, 27.
- 2018 Bochanski, J. J.; Faherty, J. K.; **Gagné, J.** et al. "Fundamental Properties of Co-Moving Stars observed by *Gaia*". *Astron. J.*, 155, 149.
- 2018 Bardalez-Gagliuffi, D. C.; **Gagné, J.**; Faherty, J. K. et al. "A Spectral Binary with Possible AB Doradus Membership". *Astrophys. J.*, 854, 101.
- 2018 Kellogg, K.; Kirkpatrick, J. D.; Metchev, S.; **Gagné, J.** et al. "Discovery of a possible Early-T Thick-Disk Subdwarf from the AllWISE2 Motion Survey". *Astron. J.*, 155, 87.
- 2018 Theissen, C. A.; (3 authors); **Gagné, J.** et al. "2MASS J11151597+1937266: A Young, Dusty, Isolated, Planetary-Mass Object with a Potential Wide Stellar Companion". *Astrophys. J.*, 853, 75
- 2018 Desrochers, M.-E.; Artigau, É.; **Gagné, J.** et al. "BANYAN. X. Discovery of a Wide, Low-Gravity L-Type Companion to a Fast-Rotating M3 Dwarf". *Astrophys. J.*, 852, 55
- 2017 Kellogg, K.; Metchev, S.; Heinze, A.; **Gagné, J.** et al. "Characterizing the Cloud Decks of Luhman 16AB with Medium-Resolution Spectroscopic Monitoring". *Astrophys. J.*, 849, 72.
- 2017 Donaldson, J.; Weinberger, A. J.; **Gagné, J.** et al. "New Parallaxes for the Upper Scorpius OB Association". *Astrophys. J.*, 850, 11.

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- 2017 Naud, M.-E.; (5 authors); **Gagné, J.** et al. "A Search for Photometric Variability in the Young T3.5 Planetary-Mass Companion GU Psc b". *Astron. J.*, 154, 138.
- 2017 Naud, M.-E.; (3 authors); **Gagné, J.** et al.. "PSYM-WIDE: A Survey for Large-Separation Planetary-Mass Companions to Low-Mass Members of Young Moving Groups". *Astron. J.*, 154, 129.
- 2017 Delorme, P.; Dupuy, T.; **Gagné, J.** et al. "CFBDSIR2149-0403: Young Isolated Planetary-Mass Object or High-Metallicity Low-Mass Brown Dwarf?". *Astron. & Astrophys.*, 602, 82.
- 2017 Kuchner, M. J.; (4 authors); **Gagné, J.** et al. "The First Brown Dwarf Discovered by the Backyard Worlds: Planet 9 Citizen Science Project". *Astrophys. J. Letters*, 19, 6.
- 2017 **Gagné, J.**; Faherty, J. K.; Burgasser, A. J. et al. "SIMP J013656.5+093347 is Likely a Planetary-Mass Object in the Carina-Near Moving Group". *Astrophys. J. Letters*, 841, 1.
- 2017 **Gagné, J.**; Faherty, J. K.; Mamajek, E. E. et al. ApJS. "BANYAN. IX. The Initial Mass Function and Planetary-Mass Object Space Density of the TW Hya Association". *Astrophys. J. Supp. Ser.*, 228, 18.
- 2016 Donaldson, J. K.; Weinberger, A. J.; **Gagné, J.** et al. "New Parallaxes and a Convergence Analysis for the TW Hya Association". *Astrophys. J.*, 833, 95.
- 2016 Silverberg, S.; Kuchner, M.; Wisniewski, J. P.; **Gagné, J.** et al. "A New M Dwarf Debris Disk Candidate in a Young Moving Group Discovered with Disk Detective". *Astrophys. J.*, 830, 28.
- 2016 Boucher, A.; Lafrenière, D.; **Gagné, J.** et al. "BANYAN. VIII. New Low-Mass Stars and Brown Dwarfs with Candidate Circumstellar Disks". *Astrophys. J.*, 832, 50.
- 2016 Lannier, J.; (5 authors); **Gagné, J.** et al. "MASSIVE: A Bayesian Analysis of Giant Planet Populations Around Low-Mass Stars". *Astron. & Astrophys.*, 596, 83.
- 2016 Robert, J.; **Gagné, J.**; Artigau, É. et al. "A Brown Dwarf Census from the SIMP Survey". *Astrophys. J.*, 830, 144.
- 2016 Schmidt, S.; Shappee, B. J.; **Gagné, J.** et al. "ASASSN-16AE: A Powerful White-Light Flare on an Early-L Dwarf". *Astrophys. J. Letters*, 828, L22.
- 2016 Faherty J. K.; Riedel, A. R.; Cruz, K. L.; **Gagné, J.** et al. "Population Properties of Brown Dwarf Analogs to Exoplanets". *Astrophys. J. Supp. Ser.*, 225, 10.

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- 2016 Gao, P.; Plavchan, P.; **Gagné, J.** et al. "Retrieval of Precise Radial Velocities from Near-Infrared High Resolution Spectra of Low Mass Stars". *Publ. Astron. Soc. Pac.*, 128, 104501.
- 2016 **Gagné, J.**; Plavchan, P.; Gao, P. et al. "A High-Precision Near-Infrared Survey for Radial Velocity Variable Low-Mass Stars Using CSHELL and a Methane Gas Cell". *Astrophys. J.*, 822, 40.
- 2016 Kellogg, K.; Metchev, S.; **Gagné, J.**; Faherty, J. K. "The Nearest Isolated Member of the TW Hydrae Association is a Giant Planet Analog". *Astrophys. J. Letters*, 821, L15.
- 2016 Burgasser, A. J.; Lopez, M. A.; Mamajek, E. E.; **Gagné, J.** et al. "The First Brown Dwarf/Planetary-Mass Object in the 32 Orionis Group". *Astrophys. J.*, 820, 32.
- 2016 Yi, X.; (9 authors); **Gagné, J.** et al. "Demonstration of a Near-IR Line-Referenced Electro-Optical Laser Comb for Precision Radial Velocity Measurements in Astronomy". *Nature*, 7, 10436.
- 2015 Burgasser, A. J.; Logsdon, S. E.; **Gagné, J.** et al. "The Brown Dwarf Kinematics Project (BDKP). IV. Radial Velocities of 85 Late-M and L Dwarfs with MagE". *Astrophys. J. Supp. Ser.*, 220, 18.
- 2015 **Gagné, J.**; Faherty, J. K.; Cruz, K. L. et al. "BANYAN. VII. A New Population of Young Substellar Candidate Members of Moving Groups from the BASS Survey". *Astrophys. J. Supp. Ser.*, 219, 33.
- 2015 **Gagné, J.**; Burgasser, A. J.; Faherty, J. K. et al. "SDSS J111010.01+011613.1: A New Planetary-Mass T Dwarf Member of the AB Doradus Moving Group". *Astrophys. J. Letters*, 808, L20.
- 2015 Artigau, É.; **Gagné, J.**; Faherty, J. K. et al. "BANYAN. VI. Discovery of a Companion at the Brown Dwarf/Planetary-Mass Limit to a Tucana Horologium M Dwarf". *Astrophys. J.*, 806, 254.
- 2015 Lachapelle, F.-R.; Lafrenière, D.; **Gagné, J.** et al. "Characterization of Low-Mass, Wide-Separation Substellar Companions to Stars in Upper Scorpius: Near-infrared Photometry and Spectroscopy". *Astrophys. J.*, 802, 61.
- 2015 Baron, F.; (3 authors); **Gagné, J.** et al. "Discovery and Characterization of Wide Binary Systems With a Very Low Mass Component". *Astrophys. J.*, 802, 37.
- 2015 **Gagné, J.**; Lafrenière, D.; Doyon, R. et al. "BANYAN. V. A Systematic All-Sky Survey for New Very Late-type Low-mass Stars and Brown Dwarfs in Nearby Young Moving Groups". *Astrophys. J.*, 798, 73.

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- 2014 Malo, L.; (5 authors); **Gagné, J.** et al. “BANYAN. IV. Fundamental Parameters of Low-Mass Star Candidates in Nearby Young Stellar Kinematic Groups - Isochronal Age Determination Using Magnetic Evolutionary Models”. *Astrophys. J.*, 792, 37.
- 2014 **Gagné, J.**; Lafrenière, D.; Doyon, R. et al. “SIMP J2154-1055: A Low-Gravity L4 $\beta$  Brown Dwarf Candidate Member of the Argus Association”. *Astrophys. J. Letters*, 792, L17.
- 2014 Malo, L.; (4 authors); **Gagné, J.** “BANYAN. III. Radial Velocity, Rotation and X-Ray Emission of Low-Mass Candidates in Nearby Young Kinematic Groups”. *Astrophys. J.*, 788, 81.
- 2014 Naud, M.-E.; (5 authors); **Gagné, J.**; Saumon, D. et al. “Discovery of a Wide Planetary-Mass Companion to the Young M3 Star GU Psc”. *Astrophys. J.*, 787, 5.
- 2014 **Gagné, J.**; Faherty, J. K; Cruz, K. et al. “The Coolest Isolated Brown Dwarf Candidate Member of TWA”. *Astrophys. J. Letters*, 785, L14.
- 2014 **Gagné, J.**; Lafrenière, D.; Doyon, R. et al. “BANYAN. II. Very Low Mass and Substellar Candidate Members to Nearby, Young Kinematic Groups With Previously Known Signs of Youth”. *Astrophys. J.* 783, 121.
- 2013 Delorme, P.; **Gagné, J.**; Girard, J. et al. “Direct Imaging Discovery of a 12-14 Jupiter-Mass Object Orbiting a Young Binary System of Very Low-Mass Stars”. *Astron. & Astrophys.*, 553, L5.
- 2013 Malo, L.; (3 authors); **Gagné, J.** et al. “Bayesian Analysis to Identify New Star Candidates in Nearby Young Stellar Kinematic Groups”. *Astrophys. J.*, 762, 88.
- 2012 Delorme, P.; **Gagné, J.**; Malo, L. et al. “CFBDSIR2149-0403: a 4-7 Jupiter-Mass Free-Floating Planet in the Young Moving Group AB Doradus?”. *Astron. & Astrophys.*, 548, 26.
- 2011 Artigau, É.; (5 authors); **Gagné, J.** et al. “Discovery of Two L and T Binaries With Wide Separations and Peculiar Photometric Properties”. *Astrophys. J.*, 739, 48.

### Research Notes

- 2018 Burningham, B.; Faherty, J. K.; **Gagné, J.**; Mann, A. and Hung, C.-L. “Discovery of a K5+T4.5 Binary System”. *Research Notes of the AAS*.
- 2018 **Gagné, J.**; Faherty, J. K. and Fontaine, G. “A Pre-Gaia DR2 Survey for Nearby M Dwarfs in Young Associations”. *Research Notes of the AAS*.

- 2018 **Gagné, J.**; Gonzales, E. C.; Faherty, J. K. “A Gaia DR2 Confirmation that 2MASS J12074836-3900043 is a Member of the TW Hya Association”. *Research Notes of the AAS*.

### White Papers

- 2019 Faherty, J. K.; (3 authors); **Gagné, J.** et al. “Astro2020 Science White Paper: Brown Dwarfs and Directly Imaged Exoplanets in Young Associations”, arXiv, 1903.06703.
- 2019 Vos J.; (5 authors); **Gagné, J.** et al. “Astro2020 Science White Paper: The L/T Transition”, BAAS, 51c, 253.
- 2019 Kastner J.; (6 authors); **Gagné, J.** et al. “Astro2020 Science White Paper: The Early Evolution of Stars and Exoplanet Systems: Exploring and Exploiting Nearby, Young Stars”, arXiv, 1903.06242.
- 2019 Burgasser, A.; (3 authors); **Gagné, J.** et al. “Astro2020 Science White Paper: High-Resolution Spectroscopic Surveys of Ultracool Dwarf Stars & Brown Dwarfs”, BAAS, 51c, 547.
- 2018 Plavchan, P.; (17 authors); **Gagné, J.** et al. “EarthFinder: A Precise Radial Velocity Probe Mission Concept for the Earth-Mass Planets Orbiting Sun-Like Stars”, arXiv, 1803.03960.
- 2018 Cale, B.; Plavchan, P.; **Gagné, J.** et al. “Precise Near-Infrared Radial Velocities with iSHELL”, arXiv, 1803.04003.
- 2017 Yee, J. C.; (27 authors); **Gagné, J.** et al. “The Science Case for an Extended *Spitzer* Mission, arXiv, 1710.04194.

### Conference Proceedings

- 2016 Plavchan, P.; Gao, P.; **Gagné, J.** et al. “Precise Near-Infrared Radial Velocities”. *Proc. of IAU*, 314, 286.
- 2016 **Gagné, J.**; Lafrenière, D.; Doyon, R. et al. “Results from BASS, the BANYAN All-Sky Survey”. *Proc. of IAU*, 314, 49.
- 2016 Malo, L.; **Gagné, J.**; Doyon, R. et al. “Nearby Young Moving Groups: Statistical Methods and Challenges for Assigning Membership”. *Proc. of IAU*, 314, 27.
- 2015 **Gagné, J.**; Lafrenière, D.; Doyon, R. et al. “Results from BASS, the BANYAN All-Sky Survey”. *Proc. of Lowell Obs.*, CS18, 975.
- 2015 Malo, L.; **Gagné, J.**; Doyon, R. et al. “Prospects for the BANYAN Search of Low-Mass Moving Group Members with GAIA, and the Importance of



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- Magnetic Fields for Isochronal Age Determination". *Mem. Soc. Astron. Ital.*, 85, 715.
- 2014 Maire, J.; **Gagné, J.**; Lafrenière, D. et al. "High-Fidelity Photometry and Astrometry of High-Contrast Imaged Companions Using LOCI Processing". *Proc. of IAU*, 299, 44.
- 2013 Naud, M.-E.; (5 authors); **Gagné, J.** et al. "A Wide Planetary-Mass Companion to a Young M3 Star of AB Dor Moving Group". *EPJ Web Conf.*, 47, 13004.
- 2013 **Gagné, J.**; Lafrenière, D.; Doyon, R. et al. "Bayesian Analysis to Identify Very Low-Mass Members of Nearby Young Stellar Kinematic Groups". *Mem. Soc. Astron. Ital.*, 84, 916.
- 2013 Delorme, P.; **Gagné, J.**; Lannier, J. et al. "Brown Dwarfs or Planets ? Some Direct Imaging Detections that Blur the Border". *Mem. Soc. Astron. Ital.*, 84, 1013.
- 2012 Maire, J.; **Gagné, J.**; Lafrenière, D. et al. "Preserving the Photometric Integrity of Companions in High-Contrast Imaging Observations Using Locally Optimized Combination of Images". *Proc. SPIE*, 60, 8447.

### Web Publications

- 2019 Blog on the scientific analysis of coffee extraction *Coffee Ad Astra*, [Link](#), 28 posts written, 58,000 visitors per year, 8,900 Instagram followers, 200 email subscribers
- 2013 *Guide to Developing an App for iOS*, [Link](#), Astrobetter blog
- 2012 *The Brown Dwarf Converter App for iOS*, [Link](#), Astrobetter blog

### RESEARCH GRANTS

- 2019 USA NSF AAG (collaborator). PI J. K. Faherty. *Collaborative Research: Applying the Spectral Inversion Technique to Exoplanet Analogs*. \$559,774 USD
- 2019 Cycle 2 TESS proposal, PID G022136 (Co-I). PI J. K. Faherty. The Rotational Period Relation Across Young Moving Groups. \$50,000 USD
- 2018 Cycle 14 Spitzer proposal, PID 14128 (Co-I). PI J. K. Faherty. The Young and the Restless: Revealing the Turbulent, Cloudy Nature of Young Brown Dwarfs and Exoplanets. \$100,000 USD

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- 2018 Cycle 14 Spitzer proposal, PID 14076 (Co-I). PI J. K. Faherty. The Coldest Discoveries of Backyard Worlds. \$8,000 USD
- 2018 Cycle 25 Hubble proposal, PID 15468 (Co-I). PI J. K. Faherty. Backyard Worlds. \$86,000 USD
- 2017 NASA ADAP grant 17-ADAP17-0067 (Co-I). PI M. Kuchner. *Backyard Worlds: Finding Nearby Brown Dwarfs through Citizen Science*. Proposal was selected but total allocated funds were not announced yet (total requested budget \$69,996 USD).
- 2017 NASA ROSES NNH16ZDA001N-APROBES (Collaborator). PI P. Plavchan. *EarthFinder: A Diffraction-Limited Precise Radial Velocity Observatory in Space*. \$127,500 USD
- 2016 NASA XRP Grant, 16-XRP16\_2-0127 (Co-I). PI M. Kuchner. *Disk Detectives Follow-up*. \$463,490 USD
- 2015 Cycle 11 Spitzer proposal, PID 11092 (Co-I). PI É. Artigau. *Direct Imaging of Jupiter and Saturn-mass planets in wide orbit around nearby young stars*. \$38,600 USD

## INVITED TALKS

- 2019 *Isolated Planetary-Mass Objects*, University of Rochester, Rochester, NY, USA, February 19.
- 2019 *Gaia and the Solar Neighborhood*, Rochester Institute of Technology, Rochester, NY, USA, February 18.
- 2019 *La Recherche et la Caractérisation d'Exoplanètes Éjectées*, Centre de Recherche des Études Littéraires et Culturelles sur la Planétarité de l'Université de Montréal, February 7.
- 2018 *The Missing Members of Nearby Young Associations*, McGill Space Institute, McGill University, Montréal, QC, Canada, September 11.
- 2018 *Isolated Planetary-Mass Objects*, National Capital Astronomers meeting, Observatory of the University of Maryland, College Park, MD, USA, April 14.
- 2018 *A New Bayesian Algorithm to identify members of young associations, and the Search for Isolated Planetary-Mass Objects*, George Mason University, Fairfax, VA, USA, March 23.

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- 2017 *A New Bayesian Algorithm to identify members of young associations, and the Search for Isolated Planetary-Mass Objects, The Brown Dwarf to Exoplanet Connection Conference, University of Delaware, Newark, DE, USA, October 26.*
- 2017 *The Search for Cold and Isolated Planetary-Mass Objects, Missouri State University, Springfield, MO, USA, March 2.*
- 2016 *The Substellar Members of Young Moving Groups, Plaskett prize talk, Winnipeg, MB, Canada, June 2.*
- 2016 *BASS-Ultracool: Finding Isolated Planetary-Mass Objects in the Neighborhood, NASA's Goddard Space Flight Center, Greenbelt, MD, USA, March 8.*
- 2016 *BASS-Ultracool: Finding Isolated Planetary-Mass Objects in the Neighborhood, STSci, Baltimore, MD, USA, February 19.*
- 2016 *BASS-Ultracool: Finding Isolated Planetary-Mass Objects in the Neighborhood, University of Delaware, DE, USA, February 9.*
- 2015 *BASS-Ultracool: Finding Isolated Planetary-Mass Objects in the Neighborhood, Université de Montréal, Qc, Canada, December 15.*
- 2014 *Brown Dwarfs in Young Moving Groups with the BASS Survey, Carnegie Institution for Science, Washington DC, USA, November 31.*
- 2014 *Brown Dwarfs in Nearby Young Associations, University of California, Los Angeles, CA, USA, April 15.*
- 2014 *Brown Dwarfs in Nearby Young Associations, Institute for Astronomy, HI, USA, March 28.*
- 2013 *Brown Dwarfs and Nearby Young Associations, American Museum of Natural History, NY, USA, August 5.*
- 2013 *Brown Dwarfs and Nearby Young Associations, Institut de Planétologie et d'Astrophysique de Grenoble, France, June 14.*

## CONFERENCE ACTIVITY

### Panels Organized

- 2018 *Brown Dwarfs, Low Mass Stars, and Directly Imaged Exoplanets in the Era of Gaia, Cool Stars 20, Boston, MA, USA, July 29–August 3.*
- 2016 *The Brown Dwarf to Exoplanet Connection, Cool Stars 19, Uppsala, Sweden, June 6–10.*

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**Plenary Talks**

- 2018 *Young Stars and Isolated Planetary-Mass Objects in the Solar Neighborhood*, Chesapeake Bay Area Exoplanet Meeting, Washington DC, USA, May 18.
- 2018 *Young Stars and Isolated Planetary-Mass Objects in the Solar Neighborhood*, 2nd Rencontres du Vietnam on Exoplanetary Science, Quy Nhon, Vietnam, February 26.
- 2018 *The BANYAN-Sigma Bayesian classifier and the search for isolated planetary-mass objects*, 231st Meeting of the American Astronomical Society, Oxon Hill, MD, USA, January 10.
- 2017 *A New Bayesian Algorithm to identify members of young associations, and the Search for Isolated Planetary-Mass Objects*, Sagan Fellows symposium, California Institute of Technology, CA, USA, November 9.
- 2017 *The Search for Isolated Planetary-Mass Objects in the Solar Neighborhood*, Annual meeting of the Canadian Astronomical Society, University of Alberta, Edmonton, Canada, June 1st.
- 2016 *New Potential Isolated Planetary-Mass Objects from BASS-Ultracool*, Magellan Science Symposium, Carnegie Institution for Science Headquarters, Washington, DC, USA, December 7-8.
- 2016 *On Finding Isolated Planetary Mass Objects and Brown Dwarfs*, sixth National Capital Area Disks meeting, Carnegie Institution for Science, Washington, DC, USA, July 26-27.
- 2016 *The BASS survey for brown dwarfs in young moving groups*, 227th Meeting of the American Astronomical Society, Kissimmee, FL, USA, January 4-8.
- 2015 *The BASS Survey: Brown Dwarfs and planetary-mass Members of Young Moving Groups*, International Astronomical Union Symposium 314: Young Stars & Planets Near the Sun, Atlanta, GA, USA, May 11-15.
- 2015 *The Brown Dwarf to Exoplanet Connection through Young Moving Groups*, Sagan Fellows symposium, California Institute of Technology, CA, USA, May 7.
- 2014 *BASS-Ultracool: Finding Isolated planetary-mass Objects in the Neighborhood*, The Brown Dwarf to Exoplanet Connection Conference, University of Delaware, DE, USA, October 23-24.
- 2014 *Brown Dwarfs in Nearby Young Associations*, Fourteenth Annual Greater IPAC Science Symposium, California Institute of Technology, CA, USA, March 27-28.

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- 2013 *Brown Dwarfs and Nearby Young Moving Groups*, Brown Dwarfs Come of Age Workshop, Fuerteventura, Spain, May 20-24.
- 2013 *Étoiles de Faible Masse et Naines Brunes des Associations Cinématiques Jeunes*, Rencontre Annuelle du Centre de Recherche en Astrophysique du Québec, Saint-Alexis-des-Monts, Qc, Canada, May 15-17.
- 2012 *La Recherche de Naines Brunes Jeunes dans WISE par l'Analyse Bayésienne*, Rencontre Annuelle du Centre de Recherche en Astrophysique du Québec, Sainte-Catherine-de-la-Jacques-Cartier, Qc, Canada, May 9-11.
- 2011 *The Direct Imaging of Exoplanets with LOCI*, Université de Montréal, Qc, Canada, May 4-6.

### Splinter Talks

- 2018 *The Impact of Gaia DR2 on the Solar Neighborhood*, Cool Stars 20, Boston, USA, July 29–August 3.
- 2016 *On Finding Isolated Planetary Mass Objects and Brown Dwarfs*, Cool Stars 19, Uppsala, Sweden, June 6–10.

### Posters

- 2017 *BASS-Ultracool: In Search of Free-Floating Giant Planets*, 3rd annual GL/DTM poster session, Washington DC, USA, May 9.
- 2016 *BASS-Ultracool: Young, Planetary-Mass T Dwarfs*, Cool Stars 19, Uppsala, Sweden, June 6-10.
- 2015 *BASS-Ultracool: Young, Planetary-Mass T Dwarfs*, Extreme Solar Systems III, Waikoloa, HI, USA, November 29-December 4.
- 2015 *SDSS 1110+0116: A New T-Dwarf Member of AB Doradus*, In the Spirit of Lyot, Montréal, Qc, Canada, June 22-26.
- 2014 *SDSS 1110+0116: A New T-Dwarf Member of AB Doradus*, Sagan Exoplanet Summer Workshop, California Institute of Technology, CA, USA, July 21-25.
- 2014 *Brown Dwarfs in Young Moving Groups*, Cool Stars 18, Flagstaff, AZ, USA, June 9-13.
- 2012 *Finding Young Brown Dwarfs with Bayesian Inference*, Cool Stars 17, Barcelona, Spain, June 24-29.

### DEPARTMENTAL TALKS

- 2016      *BASS-Ultracool: Finding isolated planetary-mass objects in the neighborhood*, Carnegie Institution for Science, Washington, DC, USA, March 3.
- 2014      *Precise NIR Radial Velocities with CSHELL*, California Institute of Technology, CA, USA, July 16.
- 2014      *Open Data Sharing*, Université de Montréal, Qc, Canada, August 21.
- 2011      *Astrometry.net and How to Use it with IDL*, Université de Montréal, Qc, Canada, August 22.

## TEACHING EXPERIENCE

### University of Montreal, Sole Instructor

2x Brown Dwarfs & Exoplanets (Graduate course; Fall 2018, Spring 2020)

Physics Concepts for Teachers (Undergraduate course; Fall 2013)

2x Special Relativity (Undergraduate course; Fall 2011, Fall 2012)

### University of Montreal, Teaching Assistant

Waves and Vibrations (Fall 2010)

Special Relativity (Fall 2009)

Classical Mechanics (Fall 2008)

## TELESCOPE PROPOSALS

### Total

As principal investigator: **44** Programs, **723.1** hours + **54** nights (classical).

As co-investigator: **41** Programs, **1,568.6** hours + **90** nights (classical).

### Spitzer Space Telescope 0.85-meter

As co-investigator: **3** programs, **868.7** hours.

Program IDs: 11092 (PI Artigau), 14076 (PI Faherty), 14128 (PI Faherty).

Instrument: IRAC.

### Hubble Space Telescope 2.4-meter

As co-investigator: **1** program, **7.5** hours (5 orbits).

Program ID: 15468.

Instrument: WFC3.

### **Gemini-South Telescope 8.2-meter**

As principal investigator: **8** programs, **242.9** hours.

As co-investigator: **4** programs, **53.8** hours.

Program IDs: GS-2012B-Q-70, GS-2012B-Q-75 (PI Naud), GS-2013A-Q-66, GS-2013B-Q-79, GS-2013B-Q-54 (PI Marsset), GS-2013B-Q-32 (PI Artigau), GS-2014A-Q-91 (PI Artigau), GS-2014A-Q-55, GS-2014B-Q-72, GS-2014B-Q-47, GS-2015A-Q-60, GS-2015A-Q-85.

Instruments: GMOS, Flamingos 2.

### **Gemini-North Telescope 8.2-meter**

As principal investigator: **8** programs, **97.6** hours.

As co-investigator: **3** programs, **8** hours.

Program IDs: GN-2013A-Q-118, GN-2013A-Q-106, GN-2013B-Q-85, GN-2013B-Q-91 (PI Marsset), GN-2014A-Q-94, GN-2014A-Q-102 (PI Artigau), GN-2014B-Q-88, GN-2015B-Q-75, GN-2017B-FT-9 (PI Wisniewski), GN-2017B-FT-21, GN-2018B-Q-304, GN-2018B-Q-118.

Instruments: GMOS, GNIRS.

### **Very Large Telescope (VLT) 8.2-meter**

As principal investigator: **1** program, **29.6** hours.

As co-investigator: **6** programs, **74.5** hours.

Program IDs: 091.D-0641A (PI Malo), 091.D-0565C, 290.C-5022A (PI Delorme), 290.C-5083A (PI Delorme), 094.C-0063A (PI Delorme), 101.C-0290A (PI Chauvin), 102.C-0121A (PI Chauvin).

Instruments: CRIRES, SINFONI, ISAAC, X-SHOOTER.

### **ALMA Observatory**

As co-investigator: **1** program, **3.6** hours.

Program IDs: 2017.1.00722.S (PI Boucher).

### **Magellan Baade 6.5-meter**

As principal investigator: **6** programs, **32** nights (classical).

As co-investigator: **9** programs, **39** nights (classical).

Semesters: 2016A–2018B, 2013A–2016B (PI Faherty), 2018B (PI Schneider).

Instruments: FIRE, FourStar.

### **Magellan Clay 6.5-meter**

As co-investigator: **1** program, **1** night (classical).

Semester: 2015A (PI Faherty).

Instrument: FIRE.

### **Southern Astrophysical Research (SOAR) Telescope 4.1-meter**

As principal investigator: **2** programs, **8** nights (classical).

Program IDs: 2012B-0356, 2013A-0233.

Instrument: OSIRIS.

### **InfraRed Telescope Facility (IRTF) 3-meter**

As principal investigator: **9** programs, **202.5** hours.

As co-investigator: **8** programs, **552.5** hours.

Program IDs: 2012A097, 2012B015, 2013A055, 2013B025, 2014B026, 2014B082 (PI Plavchan), 2015A026, 2015B027, 2015B043 (PI Plavchan), 2016A994, 2016A084 (PI Plavchan), 2016B056, 2016B107 (PI Plavchan), 2017A081 (PI Plavchan), 2017B098 (PI Wang), 2017B093 (PI Gaidos), 2018A076 (PI Faherty).

Instruments: SpeX, CSHELL, iSHELL.

### **Las Campanas Du Pont Telescope 2.5-meter**

As principal investigator: **2** programs, **8** nights (classical).

As co-investigator: **6** programs, **13** nights (classical).

Semesters: 2017A–2017B, 2014A–2016B (PI Faherty).

Instrument: CAPSCAM.

### **Mont-Mégantic Observatory 1.6-meter**

As principal investigator: **8** programs, **150.5** hours + **12** nights (classical).

Semesters: 2012A, 2012B, 2012C, 2016A, 2016B, 2017A, 2018B(2x).

Instruments: CPAPIR, SIMON.

### **Las Campanas Swope Telescope 1-meter**

As co-investigator: **1** program, **29** nights (classical).

Semester: 2016B (PI Faherty).

Instrument: CCD.

## **DATA SHARING AND OTHER SCIENTIFIC CONTRIBUTIONS**

2018      Wrote a [data reduction pipeline](#) for the iSHELL camera.



- 2018 Creation of the [BANYAN  \$\Sigma\$](#)  web tool, with more than 1 800 uses from 18 countries in its first month.
- 2017 Creation of an astronomical [finder charts](#) web tool, with 200 unique visits from 11 countries in its first four days of availability.
- 2016 Creation of [RED FLAMINGOS](#) data reduction package for the FLAMINGOS 2 spectrograph.
- 2016 Updating of FIREHOSE data reduction package for the FIRE spectrograph ([FireHose v2.0](#)).
- 2014 Creation of the [BANYAN II](#) web tool, with more than 67 000 uses from 34 countries.
- 2014 Uploaded 60+ data packages on [Figshare](#) and [Zenodo](#), gathering 1900+ views.
- 2014 Creation of a [public list](#) of all known ~1,800 L,T,Y brown dwarfs and giant exoplanets in the literature.
- 2014 Creation of a [public list](#) of ~9,000 M6 - M9 red dwarfs in the literature.
- 2014 Creation of the [RIZzo Spectral Library](#) with Kelle Cruz, granting open access to 800+ astronomical spectra.
- 2014 Creation of the [Montreal Spectral Library](#), granting open access to 200+ astronomical spectra from iREx.
- 2013 Writing of a 40-pages user manual for the SIMON camera.
- 2012 Creation and Development of an [iOS application](#) for iPhone & iPad.

## PROFESSIONAL SERVICE

### Peer Review

Reviewer, 2018 *NASA Keck Time Allocation Committee*.

Reviewer, 2018 *Gemini Canadian Time Allocation Committee*.

External Reviewer, 2018 *NESSF-18 NASA Earth and Space Science Fellowship Program*.

Reviewer, 2017 *NASA Keck Time Allocation Committee*.

Reviewer, 2016 *NASA Astrophysics Data Analysis Program*.

External reviewer, 2016 *NESSF-16 NASA Earth and Space Science Fellowship Program*.

Reviewer for *Astron. J.* (1 paper)

Reviewer for *Astrophys. J.* (5 papers)

Reviewer for *Astrophys. J. Letters* (3 papers)

Reviewer for *Mon. Not. R. Astron. Soc.* (4 papers)

Reviewer for *Mon. Not. R. Astron. Soc. Letters* (1 paper)

Reviewer for *Astron. Astrophys. Letters* (1 paper)

Reviewer for *Astron. Astrophys.* (3 papers)

### **To Profession**

Primary scientist, 2013 commissioning of SIMON near-infrared spectrometer, CTIO 1.5m telescope, Chile.

### **To Community**

Judge at 2016 DC STEM Fair for grade 6-12 students.

Collaboration with artist Marie-Josée Lebel in creating 3 astrophysics-inspired paintings for the May 2017 *Réactions Créatives* exposition at the Montreal Art Centre.

Collaboration with artist Jean-Pierre Aubé in the creation of the Exoplanètes art piece based on real astrophysics data presented at the Sporobole in Sherbrooke for the 2012 *Géopolitique de l'infini* exhibition.

## **STUDENT SUPERVISION**

2018 – Dominic Couture, Ph.D. co-supervision with René Doyon

2015 Geneviève Arboit, B.S. summer project, 4 months

2014 Charles Brunette, B.S. summer project, 4 months

The results of these two projets were included in Gagné et al. (2017, *ApJS*, 228, 18) with Arboit and Brunette as co-authors.

## **PUBLIC OUTREACH**

### **General Public Talks**

2020 *Les naines brunes et les objets de masse planétaire isolés dans l'espace*, Club d'astronomie Mont-Tremblant, Zoom Conference, May 14.

2020 *Le télescope Gaia et ses découvertes*, Club d'astronomie Laval, Zoom Conference, May 13.

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- 2019 *Le télescope Gaia et ses découvertes*, Club d'astronomie Mont-Tremblant, Mont-Tremblant, April 9.
- 2019 *Pourquoi s'intéresser à l'orbite des exoplanètes ?*, Journée d'Initiation à la Physique, Université de Montréal, January 18
- 2017 *À La Recherche d'Exoplanètes Solitaires*, Pint of Science, Montréal, May 15.
- 2017 *La Science dans le film Interstellar*, Astronomy on Tap, 24h of Science Festival, Montréal, May 12.
- 2017 Lunch & Learn lecture series, Carnegie Institution for Science HQ, April 19.
- 2017 *Planètes Errantes*, Les Grandes Conférences de l'iREx, Université de Montréal, January 24.
- 2015 *The Search for Ejected Giant Planets Isolated in Space*, The Universe Tonight, Hale Pohaku, HI, USA, December 5.
- 2015 *Les Naines Brunes et Exoplanètes*, Collège Beaubois, Montréal, Qc, Canada, April 23.
- 2012 *La Recherche en Astrophysique à l'Université de Montréal*, Annual Day of Student Research in Physics, Université de Montréal, March 5.

### Studio Interviews and Podcasts

- 2020 *BRIDGE podcast: Episode #9: Jonathan Gagné, J. Lambertson*
- 2019 *Café Normal: L'extraction*, S. Blondeau
- 2018 *Les Années-Lumière*, Radio-Canada. *Le télescope Gaia*.
- 2017 *Les Années-Lumière*, Radio-Canada. *Courrier des auditeurs*.
- 2016 *Les Années-Lumière*, Radio-Canada. *Disk Detective*.
- 2015 *Les Têtes Chercheuses - Pas banale, la vie!*, Radio-Canada
- 2015 *Les Années-Lumière*, Radio-Canada. *Bourse Sagan*.
- 2015 *Le Monde Merveilleux du Scepticisme* podcast, C. Hammock

### Live Radio Interviews

- 2015 *Daybreak Show*, CBC, L. Jardin
- 2015 *Breakaway Show*, CBC, J. Caron
- 2015 *Aaron Rand Show*, CJAD, A. Rand
- 2015 *Quartier Libre*, CISM, C. Dufétel

2012 *Quirks and Quarks*, CBC, B. McDonald

### Live Television Interviews

2015 *J. Gagné to receive the Carl Sagan Fellowship from NASA*, CTV Montreal News, M. Takahashi

2015 *Un Québécois reçoit une bourse de la NASA*, Salut-Bonjour, TVA, G. Chouinard

2012 *'Rogue Planet' Found Wandering Through Space*, CTV International News

### Text Publications

2015 *La Chasse aux Exoplanètes Éjectées*, *Astronomie-Québec* Vol. 3, No. 6, p. 26

### Others

2011 – 2014 Data Reduction for OPIOMM astronomical calendar intended to general public.

## SELECTED MEDIA COVERAGE

2018 *The Milky Way, Revealed as Never Before*, *Scientific American*, [Link](#)

2018 *Sous les Vents de Jupiter*, *La Presse*, [Link](#)

2018 *When do aging brown dwarfs sweep the clouds away?*, *Phys.org*, [Link](#)

2017 *A celestial case of mistaken identity*, *Nature News*, [Link](#)

2017 *One Of Earth's Closest Failed Stars May Actually Be A Rogue Planet*, *IFL Science*, [Link](#)

2017 *Surprise! When a brown dwarf is actually a planetary mass object*, *Science Daily*, [Link](#)

2017 *Hunting for Giant Planet Analogs in Our Own Backyard*, *Science Daily*, [Link](#)

2017 *Le Chasseur de Naines Brunes*, *Québec Science*, [Link](#)

2016 *Gaia: Un milliard d'étoiles*, *Québec Science*, [Link](#)

2016 *Astronomers discover Jupiter analogue among young stars*, *Science Daily*, [Link](#)

2016 *Giant Free-Flying Exoplanet One of Closest 'Rogue' Worlds Yet Seen*, *Space.com*, [Link](#)

2016 *Brown dwarfs reveal exoplanets' secrets*, *Science Daily*, [Link](#)

2016 *New low-mass objects could help refine planetary evolution*, *Science Daily*, [Link](#)

- 2016 *Brown dwarfs hiding in plain sight in our solar neighborhood*, Phys.org, [Link](#)
- 2016 *Lonely exoplanet orbits its star at greatest distance yet seen*, News Scientist, [Link](#)
- 2015 *La Tête dans les Étoiles*, Quartier Libre, [Link](#)
- 2015 *La NASA Finance Les Recherches d'un Montréalais*, Journal de Montréal, [Link](#)
- 2015 *Un Valdavidois Financé par la NASA*, Infos du Nord
- 2014 *Odd Planet, So Far from its Star*, Phys.org, [Link](#)
- 2012 *Lost in Space: Rogue Planet Spotted?*, Science Daily, [Link](#)
- 2012 *Astronomers find 'homeless' planet wandering through space*, Phys.org, [Link](#)

## TECHNICAL SKILLS

### Scientific Expertise

Isolated planetary-mass objects, brown dwarfs, young moving groups, precise near-infrared radial velocity detection of exoplanets, statistical methods, stellar kinematics, direct-imaging of exoplanets.

### Software & Programming Languages

Python (intermediate), Interactive Data Language (IDL; advanced, 10 yr experience), bash (intermediate), FileMaker Pro databases, Git, Systemic 2.0, Mathematica (basic), C++ (basic), Xcode & Objective-C (basic).

### Methods & Concepts

Optical and near-infrared spectroscopy, telescope observing, astrometry, Markov Chain Monte Carlo (Metropolis-Hastings, DREAM-ZS, emcee), multivariate gaussian distributions, Bayesian inference, LOCI optimization, Gaussian processes (basic).

### Experience with Astronomical Instruments & Facilities

FIRE/Magellan, FourStar/Magellan, SpeX/IRTF, Flamingos 2/Gemini, GMOS/Gemini, CSHELL/IRTF, OSIRIS/SOAR, CPAPIR/Mégantic, SIMON/CTIO.

## PROFESSIONAL CERTIFICATIONS

CAP Professional Physicist Certification, License #268, 2013 – 2023

## **PROFESSIONAL ASSOCIATIONS**

American Astronomical Society, 2015 – present

Canadian Association of Physicists, 2013 – present

Canadian Astronomical Society, 2013 – present

## **LANGUAGES**

French: Native

English: Full professional proficiency (speaking, listening, reading, writing)

Spanish: General professional proficiency (reading), Limited working proficiency (speaking, listening, writing)