

Positions	<p>Fields Institute (Spring 2020) Western University (Fall 2019) Joint postdoctoral fellowship University of Toronto (2016–2019) Postdoctoral fellowship Universidade de São Paulo (2015–2016) Pós-Doutorado de Excelência, funded through IMPA (o Instituto Nacional de Matemática Pura e Aplicada) and CAPES (a Coordenação de Aperfeiçoamento de Pessoal de Nível Superior)</p>
Education	<p>Tufts University Ph.D. in Mathematics (2015) Advisor: Loring Tu Dissertation: <i>On the equivariant cohomology of homogeneous spaces</i></p>
Citizenship	United States
Interests	<p>Equivariant cobordism and equivariant K-theory Borel cohomology, transformation groups, and low-cohomogeneity actions A_∞-algebras Galois cohomology and algebraic K-theory Homotopy theory Low-dimensional topology and surface dynamics</p>
Book	<p><i>The Rational Cohomology of Homogeneous Spaces</i> (2020 (projected), under revision by request of Springer <i>Developments in Mathematics</i> series). dropbox.com/s/dz1fbsfokn6z6n3/homogeneous_space_book.pdf</p>
Publications	<ol style="list-style-type: none">1. The Borel equivariant cohomology of real Grassmannians (2016), to be published in the <i>Proceedings of the American Mathematical Society</i> (2019, 15pp.). arxiv.org/abs/1611.011752. The equivariant cohomology ring of a cohomogeneity-one action (with Chen He, Oliver Goertsches, and Liviu Mare, 2018), <i>Geometriae Dedicata</i> (2019, 18pp.). arxiv.org/abs/1802.023043. Equivariant formality of homogeneous spaces (with Chi-Kwong Fok, 2017), <i>Journal of the London Mathematical Society</i> (2018, 23pp.). arxiv.org/abs/1511.062284. Equivariant formality of isotropic torus actions (2014), <i>Journal of Homotopy and Related Structures</i> (2018, 34pp.). arxiv.org/abs/1410.57405. Conceptions of topological transitivity (with Ethan Akin, 2010), <i>Topology and its Applications</i> 159 (2012), pp. 2815–2830. arxiv.org/abs/1108.4710
Preprints	<ol style="list-style-type: none">1. Fixed points and semifree bordism (2019, 5pp., background being expanded) arxiv.org/abs/1908.06906

2. Realization of abstract GKM isotropy data
(with Elisheva Adina Gamse and Yael Karshon, 2018, 15pp.).
math.toronto.edu/jcarlson/realization.pdf
3. The equivariant K-theory of an isotropy action (2018, 22pp.).
arxiv.org/abs/1810.09685
4. The equivariant K-theory of a cohomogeneity-one action (2018, 29pp.).
arxiv.org/abs/1805.00502
5. Commensurability of two-multitwist pseudo-Anosovs (2010, 33pp.).
arxiv.org/abs/1011.0247

Selected conference
talks

$\left\{ \begin{array}{l} \textit{Local integration in equivariant cobordism theory}, \\ \textit{The equivariant K-theory of a cohomogeneity-one action}, \end{array} \right.$
“Topology” session,
“Equivariant methods in differential and algebraic geometry” session,
 Canadian Mathematical Society Summer Meeting, Regina (June 2019, invited)

[Realization of fixed-point data for locally standard torus actions](#),
Glances@Manifolds, Jagiellonian University, Kraków (July 2018)

[The equivariant cohomology and K-theory of a cohomogeneity-one action](#),
Algebraic Topology, Combinatorics, and Mathematical Physics, on the occasion of Victor Buchstaber’s
75th birthday, Steklov Institute and Skolkovo Technical Institute, Moscow (May 2018, invited)

[Rational equivariant K-theory of homogeneous spaces](#),
Homotopy theory: Tools and Applications, University of Illinois, Urbana-Champaign (July 2017)

[Equivariant formality beyond Hamiltonian actions](#),
Mathematical Congress of the Americas, Montreal (July 2017, invited)

[Equivariant formality and formality for isotropy actions of homogeneous spaces](#),
First Annual Graduate Student Geometric Group Theory and Related Topics Conference,
Tufts University (August 2016, invited)

[Formality and equivariant formality for isotropy actions](#) (in Portuguese),
[XX Encontro Brasileiro de Topologia](#),
Universidade Tecnológica Federal do Paraná, Curitiba (July 2016)

[Equivariant formality in rational cohomology and K-theory](#),
Conference on geometry in algebra and algebra in geometry,
Universidade de São Paulo (November 2015, invited)

[Circle subgroups of compact Lie groups](#),
Joint Mathematics Meetings, San Antonio (January 2015)

Selected
seminar talks

[The K-theory of an isotropy action and an unsolved problem in polynomial rings](#) (in Portuguese),
Seminário Salomônico, Universidade Federal Fluminense, Niterói, RJ, Brazil (August 2019)

[Equivariant formality, K-theory, and isotropy](#), University of Rochester (October 2018)

[Cohomogeneity-one actions and a little-remarked structure on the Mayer–Vietoris sequence](#),
Symplectic seminar, University of Toronto (March 2017)

[Equivariant formality in rational cohomology and K-theory](#),
Geometry and Topology seminar, Western University (December 2016)

[Equivariant formality of isotropy actions in rationalized cohomology and K-theory](#),
Seminário de física matemática, IMPA, Rio de Janeiro (May 2016)

[Commensurable and incommensurable pseudo-Anosovs](#),
[Tufts Geometric Group Theory and Topology Seminar](#) (October 2010)

Selected teaching	<p>Western University</p> <ul style="list-style-type: none"> ● Directed Reading Program in Mathematics (mentor) <p>University of Toronto:</p> <ul style="list-style-type: none"> ● Vector Calculus (course coordinator, instructor) <p>Universidade de São Paulo:</p> <ul style="list-style-type: none"> ● Topologia Diferencial (group reading course facilitator) ● Equivariant Cohomology (seminar coordinator, lecturer) <p>Tufts University:</p> <ul style="list-style-type: none"> ● Mathematics of Social Choice (course coordinator, instructor) ● Finite Mathematics (instructor) ● Differential Forms in Algebraic Topology (TA) ● Number Theory (TA) ● History of Mathematics (TA) ● Mathematical Neuroscience (grader)
Memberships	<p>American Mathematical Society (AMS)</p> <p>Association for Women in Mathematics (AWM)</p>
Service	<p>Co-organizer, “Equivariant geometry and topology” session of the 2016 Canadian Mathematical Society Winter Meeting in Niagara (with Elisheva Adina Gamse).</p> <p>Referee, <i>Mathematische Zeitschrift</i>, <i>Homology, Homotopy, and Applications</i>, <i>Topology and its Applications</i>, <i>São Paulo Journal of Mathematical Sciences</i></p>
Editorial work	<p>Editorial board, Poincaré Institute for Mathematics Education, Summer 2013</p> <p>The Poincaré Institute is a NSF-funded collaboration between Tufts University and the non-profit Technical Education Research Centers designed to improve middle school mathematics education through graduate-level online courses offered to in-service middle school mathematics teachers.</p> <p>Edited books and articles by Loring Tu (selected)</p> <ul style="list-style-type: none"> ● <i>Introductory Lectures on Equivariant Cohomology</i>, book in progress. ● <i>Elements of Equivariant Cohomology</i>, with Raoul Bott, unpublished. ● <i>Differential Forms in Algebraic Topology</i>, 2nd edition, with Raoul Bott, edition in progress. ● <i>Differential Geometry: Connections, Curvature, and Characteristic Classes</i>, Grad. Texts in Math. 275, Springer, New York, 2017. ● <i>An Introduction to Manifolds</i>, [first and] second edition, Universitext, Springer, New York, 2011. ● Raoul Bott: <i>Collected Papers</i>, volume 5 [collection of permissions], Birkhäuser, Basel, 2017. ● From sheaf cohomology to the algebraic de Rham theorem (with Fouad El Zein), pp. 69–121 in <i>Hodge Theory</i>, eds. Eduardo Cattani, Fouad El Zein, Phillip A. Griffiths, and Lê Dũng Tráng, Princeton University Press, Princeton, New Jersey, 2014. ● Computing characteristic numbers using fixed points, in <i>A Celebration of the Mathematical Legacy of Raoul Bott</i>, CRM Proceedings and Lecture Notes, vol. 50, American Mathematical Society, Providence, RI, 2010, pp. 185–206.

Feedback on and copyediting of other books

- *A Primer on Mapping Class Groups*, Benson Farb and Dan Margalit, Princeton Mathematical Series vol. 49, Princeton University Press, Princeton, NJ, 2011.
- *An Introduction to Modeling Neuronal Dynamics*, Christoph Börgers, Texts in Applied Mathematics vol. 66, Springer, New York, 2017.
- *Category Theory*, Steven Awodey, Oxford Logic Guides vol. 52, Oxford University Press, New York, 2006.
- *Computability and Learnability*, Kevin Kelly, unpublished.
- *Metamathematics and Proof Theory*, Jeremy Avigad, unpublished.
- Introduction to the calculus of variations, William Hrusa, unpublished.

Languages

English: native speaker (polished if ornate, with many opinions on usage)

Portuguese: fluent at the level of the news, but not of poetry

Mandarin: basic conversation (but worsening accent), menu comprehension

References

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