Ian Lizarraga

CONTACT INFORMATION	489 Carslaw Building Mathematics Department University of Sydney Camperdown 2006, NSW Australia	Email: ian.lizarraga@sydney.edu.au Homepage: https://people.cam.cornell.edu/~iml32/

ACADEMIC POSITIONS

2018–2020   Postdoctoral Fellow
University of Sydney School of Mathematics and Statistics
Supervisor: Martin Wechselberger

2017–2018   Visiting Assistant Professor
Cornell University Math Department

EDUCATION

2011–2017   PhD in Applied Mathematics
Cornell Center for Applied Mathematics
Advisors: John Guckenheimer & Steven Strogatz

2008–2011   BA in Mathematics and Honors Physics
Northwestern University
Thesis advisor: Frederic Rasio

RESEARCH INTERESTS

Geometric singular perturbation theory, model reduction in coupled oscillators, computational techniques for invariant manifolds

PUBLICATIONS

- **I.L.** and M. Wechselberger, *Delayed and singular Hopf bifurcations in nonstandard slow-fast systems*, in prep. (2019)
- **I.L.**, R. Marangell, and M. Wechselberger, *Contact singularities in nonstandard slow-fast systems*, in prep. (2019)
- **I.L.** and M. Wechselberger, *Computational singular perturbation method for nonstandard slow-fast systems*, submitted to SIADS (2019)
- **I.L.**, *Modeling mixed-mode oscillations near a tangency of slow manifolds*, preprint available on homepage, accepted to Chaos (2019)
- J. Guckenheimer and **I.L.**, *Shilnikov homoclinic bifurcation of mixed-mode oscillations*, SIAM J. Appl. Dyn. Syst. 14-2 (2015)
- I. Kloumann, **I.L.**, and S. Strogatz, *Phase diagram for the Kuramoto model with van Hemmen interactions*, Physical Review E 89, 012904 (2014)
- J. Teyssandier, S. Naoz, **I.L.**, and F. Rasio, *Extreme orbital evolution from hierarchical secular coupling of two giant planets*, The Astrophysical Journal 779 166 (2013)

THESES

- *Complex Mixed-Mode Oscillations and a Search for Oscillator Glass*, Cornell University Ph.D. Thesis (2017)
- *Secular Dynamics of Three-Body Systems and the Origins of Retrograde Hot Jupiters*, Northwestern University Senior Thesis (2011)

Talks	2020 Feb	ANZIAM, Hunter Valley, NSW, Australia
	2019 Dec	Applied Maths Seminar, UNSW, Australia[†]
	2019 Nov	SDG Conference, Margaret River, WA, Australia
	2019 July	Equadiff, Universiteit Leiden, Netherlands[†]
	2019 July	Edinburgh Slow-Fast-Ival Workshop, Edinburgh, UK
	2019 May	SIAM Conference on Dynamical Systems, Snowbird, UT, USA
	2019 Feb	ANZIAM, Nelson, New Zealand
	2018 Nov	SDG Conference, Blackheath, NSW, Australia
	2018 Oct	Sydney Dynamics Group Seminar[†], Sydney, NSW
	2017 Aug	Cornell University Applied Math Talk, Ithaca, NY, USA
	2015 May	SIAM Conference on Dynamical Systems[†], Snowbird, UT, USA
	2015 Mar	Cornell Dynamical Systems Seminar, Ithaca, NY, USA
	2014 Jul	SIAM Annual Meeting, Chicago, IL, USA
	2013 Nov	Cornell SCAN Seminar, Ithaca, NY, USA[†]
	2012 Dec	Cornell Topics in PDEs Seminar, Ithaca, NY, USA

[[†] invited talks]

Honors and Awards	2019	Robert Bartnik Visiting Fellowship, Monash University
	2019	Accommodation Funding, TU Munich, Germany Dynamics & Geometry Summer School
	2014	SIAM Student Travel Award
	2011	Cornell University Graduate Research Fellowship
	2011	Magna cum laude, Phi Beta Kappa, Sigma Pi Sigma
	2011	Rhodes Scholarship finalist
	2011	CIERA Summer Research Funding (PI: Fred Rasio)
	2010	Belize Ministry of Education Senior Fellowship (USD 20,000)
	2010	Northwestern University Summer Research Grant
	2010	Oak Ridge National Laboratory Summer Biophysics Grant
	2009	NSF Summer Research Funding (PI: Adilson Motter)
	2008	Belize Ministry of Education CAPE First Prize (USD 40,000)

Teaching

Instructorships

2019 Sem 1	Math 3063: Differential Equations with Applications to Biology (120 students)
2018 Sp	Math 1110: Calculus I (60 students)
2017 Fa	Math 1120: Calculus II (60 students)

TA: Teaching Assistantship; GA: Grading Assistantship

2017 Sp	TA	Math 2210: Multivariable Calculus
2016 Fa	TA	Math 2940: Linear Algebra for Engineers (Head TA for 15 sections and ∼450 students)
2016 Su	GA	Math 1110: Calculus I
2016 Sp	TA	Math 1106: Calculus for the Life and Social Sciences
2015 Fa	TA	Math 2210: Linear Algebra
2015 Sp	TA	Math 2940: Linear Algebra for Engineers
2014 Fa	GA	Math 4200: Diff Eqs. and Dynamical Systems
2013 Sp	GA	MAE 5780: Nonlinear Dynamics and Chaos
2012 Fa	TA	Math 1910: Single Variable Calculus

Service

2019	USyd Applied Mathematics Seminar Organizer
2019	SIAM DS19 Organizer for Two Minisymposia (11 speakers total)
2012 – 2015	Cornell SIAM Student Chapter President
2012 – 2013	CAM Minority Student Forum Member
2010 – 2011	Service Chair for Alpha Phi Omega Service Fraternity

COMPUTING
LANGUAGES

MATLAB, Mathematica, FORTRAN, C

REFERENCES

Martin Wechselberger, Professor of Mathematics
Postdoctoral Supervisor
+61-2-9351 3860 , `wm@maths.usyd.edu.au`

John Guckenheimer, Abram R. Bullis Professor Emeritus of Mathematics
Graduate Advisor
Math Department, Cornell University
+1 (607) 255-8290, `jmg16@cornell.edu`

Steven Strogatz, Jacob Gould Schurman Professor of Applied Mathematics
Graduate Advisor
Math Department, Cornell University
+1 (607) 255-5999, `shs7@cornell.edu`

Teaching Reference:
Kelly Delp, Director of TA Programs and Senior Lecturer
Math Department, Cornell University
+1 (607) 254-5058, `kdelp@math.cornell.edu`