Patricio Jeraldo

Mayo Clinic
200 First Street SW
Rochester, MN 55905

Phone: (507) 202-1843
Email: jeraldo.patricio@mayo.edu
Homepage: http://guava.physics.uiuc.edu/~patricio

Personal

Citizenship: Chilean Citizen

US Visa status / work authorization: F-1 student (OPT/STEM extension); H-1B pending

Languages: Spanish: native; English: read, written and spoken

Academic and Research Interests

Quantitative and Physical Biology, Microbial Ecology and Metagenomics, Bioinformatics, Superfluid Hydrodynamics, Topological Defect Dynamics

Education

Ph.D. Physics, University of Illinois at Urbana-Champaign, 2012
Thesis: Computational approaches to stochastic systems in physics and ecology
Advisor: Nigel Goldenfeld

M.S. Physics, University of Illinois at Urbana-Champaign, 2007

Magíster en Ciencias mención Física (equivalent to M.Sc. Physics), Universidad de Chile, 2004
Thesis: Quantitative Model for the Growth of Biomaterials: A Study of Avian Eggshell
Advisor: Fernando Lund

Licenciatura en Ciencias mención Física (equivalent to B.Sc. Physics), Universidad de Chile, 2002

Skills

Numerical programming in C/C++, Matlab, Java

Scripting in Python, Bash and R, with emphasis on numerical and bioinformatics modules

User level knowledge of parallel computing queuing systems (SGE)

Basic knowledge of parallel computing libraries (MPI) and general purpose GPU computing

Knowledge of 16S rRNA bioinformatics pipelines for high-throughput data analysis

Proficiency in administering Linux/UNIX systems

Employment

Postdoctoral

Institute for Genomic Biology, University of Illinois at Urbana-Champaign, April 2012 – current

Department of Surgery, Mayo Clinic, April 2012 – current (joint with U. of Illinois)

Teaching - University of Illinois at Urbana-Champaign

Thermal and Statistical Physics (University), Fall II 2011, Teaching Assistant (Discussion)

Quantum Physics (University), Fall I 2011, Teaching Assistant (Discussion)

Electricity & Magnetism and Modern Physics (College), Spring 2010, Teaching Assistant (Discussion)

Mechanics and Heat (College), Fall 2008, Teaching Assistant (Lab)

Electricity & Magnetism and Modern Physics (College), Spring 2007, Teaching Assistant (Lab)

Electricity & Magnetism and Modern Physics (College), Fall 2006, Teaching Assistant (Lab)

Atomic and Quantum Physics (Phys. Major), Spring 2005, Teaching Assistant (Grading)

Atomic and Quantum Physics (Phys. Major), Fall 2004, Teaching Assistant (Grading)

Teaching - Universidad de Chile

Contemporary Physics (Engr. Major), Fall 2003, Teaching Assistant (Discussion)

Computational Methods in Physics (Phys. Major), Spring 2002, Teaching Assistant

Electromagnetism (Engr. Major), Fall 2002, Teaching Assistant (Discussion)

Introductory Modern Physics (Phys. Major), Spring 2001, Teaching Assistant (Discussion)

Contemporary Physics (Engr. Major), Fall 2001, Teaching Assistant (Discussion)

Other

Physics Computer Services - Dept. of Physics, Univ. of Illinois at Urbana Champaign, Summer 2005 - Spring 2006, Graduate Assistant (Tech Support)

Awards and Honors

L.S. Edelheit Family Biological Physics Fellowship, 2009

Teacher Ranked as Excellent, Physics 102 - College Physics: Electricity & Magnetism and Modern Physics, Spring 2006

Teacher Ranked as Outstanding, Physics 102 - College Physics: Electricity & Magnetism and Modern Physics, Spring 2007

Teacher Ranked as Excellent, Physics 101 - College Physics: Mechanics and Heat, Fall 2008

Teacher Ranked as Outstanding, Physics 213/214 - University Physics: Thermal and Statistical Physics, Quantum Physics, Fall 2011

Phi Kappa Phi Honor Society

Publications

P. Jeraldo, J.L. Arias, F. Lund, S. Maeckelberghe and D. Walgraef, *Towards a quantitative model of eggshell growth: a two-dimensional study*, in Proceedings of the 9th International Symposium on Biomineralization, edited by J.L. Arias and M.S. Fernández (Editorial Universitaria, Santiago, Chile, 2007), pp. 155-164

M. Sipos, **P. Jeraldo**, N. Chia, A. Qu, A.S. Dhillon, M.E. Konkel, K.E. Nelson, B. White, and N. Goldenfeld, *Robust Computational Analysis of rRNA Hypervariable Tag Datasets*, PLoS ONE **5**, e15220 (2010)

P. Jeraldo, N. Chia, and N. Goldenfeld, *On the Suitability of Short Reads of 16S rRNA for Phylogeny-based Analyses in Environmental Surveys*, Environ. Microbiol. **13**, 3000-3009 (2011)

J. Brulc, C. Yeoman, M. Wilson, M. Berg-Miller, **P. Jeraldo**, S. Jindou, N. Goldenfeld, H. Flint, R. Lamed, M. Vodovnik, I. Borovok, K. E. Nelson, E. Bayer, and B. White, *Cellulosomics, a Gene-Centric Approach to Investigating the Intraspecific Diversity and Adaptation of Ruminococcus flavefaciens within the Rumen*, PLoS ONE **6**, e25329 (2011)

L. Angheluta, **P. Jeraldo**, and N. Goldenfeld, *Anisotropic velocity statistics of topological defects under shear flow*, Phys. Rev. E **85**, 011153 (2012) (also at arXiv:1201.5758)

P. Jeraldo, M. Sipos, N. Chia, J.M. Brulc, A.S. Dhillon, M.E. Konkel, C.L. Larson, K.E. Nelson, A. Qu, L.B. Schook, F. Yang, B.A. White and N. Goldenfeld, *Quantification of the relative roles of niche and neutral processes in structuring gastrointestinal microbiomes*, Proc. Nat. Acad. Sci. USA **109**, 9692-9698 (2012)

C. Yeoman, N. Chia, **P. Jeraldo**, M. Sipos, N. Goldenfeld and B.A. White, *The microbiome of the chicken gastroinstestinal tract*, Anim. Health Res. Rev. **13**, 89-99 (2012)

M.R.S. Walther-António, **P. Jeraldo**, M. Berg-Miller, C.J. Yeoman, K.E. Nelson, B.A. Wilson, B.A. White, N. Chia and D.J. Creedon, *Pregnancy's Stronghold on the Vaginal Microbiome*, PLoS ONE **9**, e98514 (2014)

A.G. Theofiles, S.A. Cunningham, N. Chia, **P. Jeraldo**, D.J. Quest, J.N. Mandrekar and R. Patel, *Pertussis Outbreak, Southeastern Minnesota, 2012*, Mayo Clin. Proc., in press (2014)

P. Jeraldo, K. Kalari, X. Chen, J. Bhavsar, A. Mangalam, B.A. White, H. Nelson, J-P. Kocher and N. Chia, *IM-TORNADO: A Tool for Comparison of 16S Reads from Paired-End Libraries*, under review

Presentations

Talks

Evolutionary dynamics of a rare biosphere in the chicken caecum, Biocomplexity Theme Seminar, Institute for Genomic Biology, Univeristy of Illinois at Urbana-Champaign, March 2009

Quantitative Model for the Growth of Biomaterials, 2nd SBPMat Meeting, Rio de Janeiro, Brazil, October 2003

Posters

Deep metagenomic sequencing for de novo assemblies of genomes from the gut microbiota, Keystone Symposia: Exploiting and Understanding Biochemical Transformations in the Human Microbiome, Big Sky, MT, April 2014

De novo hybrid sequence assembly of metagenomes from human gut communities, Cell Symposia: Microbiome and Host Health, Lisbon, Portugal, May 2013

TORNADO v2: a pipeline for alignments and comparison for microbiome read libraries from next-generation sequencing platforms, Individualizing Medicine Conference 2012, Mayo Clinic, Rochester, MN, October 2012

On the suitability of short reads of 16S rRNA for phylogeny-based analyses in environmental surveys, Keystone Symposia: Microbial Communities as Drivers of Ecosystem Complexity, Breckenridge, CO, March 2011

Collective Dynamics of HGT, Institute for Genomic Biology Fellows Symposium, University of Illinois at Urbana-Champaign, February 2007

Quantitative Model for the Growth of Biomaterials, 10th International Workshop on Instabilities and Non-equilibrium Structures, Viña del Mar, Chile, December 2003

References

Prof. Nigel Goldenfeld, email: `nigel@uiuc.edu`

Prof. Bryan White, email: `bwhite44@illinois.edu`

Prof. Nicholas Chia, email: `chia.nicholas@mayo.edu`

Last updated: August 16, 2014
`http://guava.physics.uiuc.edu/~patricio/CV.html`