

MARK PIRAINO

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ACADEMIC APPOINTMENTS

RTG Postdoctoral fellow
Northwestern University

September 2019 - present

EDUCATION

University of Victoria
Ph.D. in Mathematics

August 2019

DePaul University
M.S. in Pure Mathematics (with distinction)

June 2015

DePaul University
B.S. in Chemistry and Mathematics

June 2014

CERTIFICATES

Northwestern University School of Professional Studies
Data Science and Visualization

December 2020 (expected)

RESEARCH INTERESTS

I am interested in a variety of problems most of which sit at the intersection of ergodic theory, dynamical systems, probability, and statistical mechanics. These include topics such as random matrix products, factor maps, sub-additive thermodynamic formalism, ergodic properties of equilibrium states, and phase transitions.

PUBLICATIONS

- Transfer operators and limit laws for typical cocycles. (joint with Kiho Park)
submitted, ArXiv: <https://arxiv.org/abs/2007.02349>
- Single site factors of Gibbs measures.
Nonlinearity, DOI: <https://doi.org/10.1088/1361-6544/ab5179>
- The weak Bernoulli property for matrix Gibbs states.
to appear in *Ergodic Theory and Dynamical Systems*, DOI: <https://doi.org/10.1017/etds.2018.129>
- Projections of Gibbs states for Hölder potentials.
Journal of Statistical Physics, DOI: <https://doi.org/10.1007/s10955-018-1967-3>

TEACHING EXPERIENCE

Northwestern University

- Math 220-1: Single-Variable Differential Calculus. (Fall 2019 $\times 2$)
- Math 220-2: Single-Variable Integral Calculus. (Winter 2020, Fall 2010 $\times 2$)

University of Victoria

- Sessional instructor: Math 100 Calculus 1.
- Tutorial leader: Math 100/101 Calculus, Math 110 Linear Algebra, Math 200 Multivariable Calculus.
- Assistance center tutor: Informal drop in tutoring for 100/200 level mathematics courses.

DePaul University

- Teaching assistant: MAT 335-336 Real analysis I-II, MAT 150-152 Calculus I-III, MAT 304 Differential Equations.

INVITED TALKS

- *Matrix equilibrium states* January 2020
JMM: Special session on Symbolic Dynamics, Denver CO
- *Matrix equilibrium states* July 2019
Thermodynamic Formalism: Ergodic Theory and Geometry. Warwick, UK.
- *Single site factors of g -measures* August 2018
50 years of Thermodynamic formalism. Leiden, Netherlands.
- *1-Block factors of g -measures* July 2018
Topics in Mathematical Physics Satellite to the ICM 2018. São Paulo, Brazil.

AWARDS AND SCHOLARSHIPS

- Governor General's gold medal. This is a university wide award given each year to one graduate student for the most outstanding thesis.
- Scholarships: DePaul Scholarship, Welch Scholarship, Graduate Assistantship (DePaul University), UVIC Outstanding Graduate Entrance (2015-2016), UVIC Graduate award (2015-2016, 2018-2019), UVIC Graduate Fellowship (2016-2017).