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Saúl Pilatowsky-Cameo

Education

2021 - Present **PhD in Physics**, *Massachusetts Institute of Technology (MIT).*
Advisor: Prof. Soonwon Choi
Area: Quantum Information

2016 - 2021 **B.S. in Mathematics**, *National Autonomous University of Mexico (UNAM).*
Gabino Barreda Medal (ranked 1st in Mathematics graduating class)
Advisor: Prof. Natalia Jonard Pérez
Thesis: *Haar's Theorem and its Inverse* (defense passed with Honors)

2014 - 2019 **B.S. in Physics**, *National Autonomous University of Mexico (UNAM).*
Gabino Barreda Medal (ranked 1st in Physics graduating class)
Advisor: Prof. Jorge G. Hirsch

Employment

2022 - Present **MIT**, *Research/Teaching Assistant.*

2019 - 2021 **UNAM — School of Science**, *Teaching Assistant*, Department of Mathematics.

2019 - 2021 **UNAM — Institute of Nuclear Sciences**, *Research Assistant.*

Publications

2025 **Pilatowsky-Cameo, Saúl** and Soonwon Choi. Quantum thermalization must occur in translation-invariant systems at high temperature. *Nature Communications* 17, 1, 2025.

2025 **Pilatowsky-Cameo, Saúl**, Soonwon Choi, and Wen Wei Ho. Critically slow Hilbert-space ergodicity in quantum morphic drives. *Physical Review Letters* 135, 14, 2025.

2025 Adway Kumar Das, Cameron Cianci, Delmar G. A. Cabral, David A. Zarate-Herrada, Patrick Pinney, **Saúl Pilatowsky-Cameo**, Apollonas S. Matsoukas-Roubeas, Victor S. Batista, Adolfo del Campo, E. Jonathan Torres-Herrera, and Lea F. Santos. Proposal for many-body quantum chaos detection. *Phys. Rev. Res.* 7, 013181, 2025.

2024 **Saúl Pilatowsky-Cameo**, Iman Marvian, Soonwon Choi, and Wen Wei Ho. Hilbert-space ergodicity in driven quantum systems: Obstructions and designs. *Phys. Rev. X* 14, 041059, 2024.

2023 David Villaseñor, **Saúl Pilatowsky-Cameo**, Jorge Chávez-Carlos, Miguel A. Bastarrachea-Magnani, Sergio Lerma-Hernández, Lea F. Santos, and Jorge G. Hirsch. Classical and quantum properties of the spin-boson Dicke model: Chaos, localization, and scarring. *arxiv:2405.20381*, 2023.

2023 **Saúl Pilatowsky-Cameo**, Ceren B. Dag, Wen Wei Ho, and Soonwon Choi. Complete Hilbert-space ergodicity in quantum dynamics of generalized Fibonacci drives. *Phys. Rev. Lett.* 131, 250401, 2023.

2023 Zeyang Li, Simone Colombo, Chi Shu, Gustavo Velez, **Saúl Pilatowsky-Cameo**, Roman Schmied, Soonwon Choi, Mikhail Lukin, Edwin Pedrozo-Peñafiel, and Vladan Vuletić. Improving metrology with quantum scrambling. *Science* 380, 6652, 1381–1384, 2023.

2022 David Villaseñor, **Saúl Pilatowsky-Cameo**, Miguel A. Bastarrachea-Magnani, Sergio Lerma-Hernández, Lea F. Santos, and Jorge G. Hirsch. Chaos and thermalization in the spin-boson Dicke model. *Entropy* 25, 1, 8, 2022.

2022 **Saúl Pilatowsky-Cameo**, David Villaseñor, Miguel A. Bastarrachea-Magnani, Sergio Lerma-Hernández, and Jorge G. Hirsch. Effective dimensions of infinite-dimensional Hilbert spaces: A phase-space approach. *Phys. Rev. E* 105, 064209, 2022.

2022 **Saúl Pilatowsky-Cameo**, David Villaseñor, Miguel A. Bastarrachea-Magnani, Sergio Lerma-Hernández, Lea F. Santos, and Jorge G. Hirsch. Identification of quantum scars via phase-space localization measures. *Quantum* 6, 644, 2022.

2021 **Saúl Pilatowsky-Cameo**. Caminando entre medidas invariantes y topologías: El teorema de Haar inverso. *Revista Metropolitana de Matemáticas* 12, 55–69, 2021.

2021 David Villaseñor, **Saúl Pilatowsky-Cameo**, Miguel A. Bastarrachea-Magnani, Sergio Lerma-Hernández, and Jorge G. Hirsch. Quantum localization measures in phase space. *Phys. Rev. E* 103, 052214, 2021.

2021 **Saúl Pilatowsky-Cameo**, David Villaseñor, Miguel A Bastarrachea-Magnani, Sergio Lerma-Hernández, Lea F Santos, and Jorge G Hirsch. Quantum scarring in a spin-boson system: fundamental families of periodic orbits. *New Journal of Physics* 23, 3, 033045, 2021.

2021 **Saúl Pilatowsky-Cameo**, David Villaseñor, Miguel A. Bastarrachea-Magnani, Sergio Lerma-Hernández, Lea F. Santos, and Jorge G. Hirsch. Ubiquitous quantum scarring does not prevent ergodicity. *Nature Communications* 12, 1, 2021.

2020 David Villaseñor, **Saúl Pilatowsky-Cameo**, Miguel A Bastarrachea-Magnani, Sergio Lerma-Hernández, Lea F Santos, and Jorge G Hirsch. Quantum vs classical dynamics in a spin-boson system: manifestations of spectral correlations and scarring. *New Journal of Physics* 22, 6, 063036, 2020.

2020 **Saúl Pilatowsky-Cameo**, Jorge Chávez-Carlos, Miguel A. Bastarrachea-Magnani, Pavel Stránský, Sergio Lerma-Hernández, Lea F. Santos, and Jorge G. Hirsch. Positive quantum Lyapunov exponents in experimental systems with a regular classical limit. *Phys. Rev. E* 101, 010202, 2020.

Invited Talks

Feb 2026 Quantum Information Seminar, MIT Center for Theoretical Physics. *Entanglement in quantum spin chains is strictly finite at any temperature.*

Aug 2025 Departamental seminar, National University of Singapore (NUS). *Quantum thermalizaton of translation-invariant systems at high temperature.*

Jun 2025 Seminario del Departamento de Estructura de la Materia, Instituto de Ciencias Nucleares, UNAM. *Quantum thermalizaton of translation-invariant systems at high temperature.*

May 2025 Harvard ITAMP. *Quantum thermalizaton of translation-invariant systems at high temperature.*

May 2025 Max Planck Institute of Quantum Optics, Munich. *Quantum thermalizaton of translation-invariant systems at high temperature.*

Jan 2025 Center for Ultracold Atoms (CUA) Retreat 2025. *Quantum thermalizaton of translation-invariant systems at high temperature.*

Sep 2024 Quantum Information Seminar, MIT Center for Theoretical Physics. *Quantum thermalizaton of translation-invariant systems at high temperature.*

Jun 2024 QMQI seminar, Technical University of Munich (TUM). *Complete Hilbert-space ergodicity in quantum dynamics of generalized Fibonacci drives.*

Nov 2023 Quantum Information Seminar, MIT Center for Theoretical Physics. *Complete Hilbert-space ergodicity in quantum dynamics of generalized Fibonacci drives.*

Oct 2023 Harvard ITAMP. *Complete Hilbert-space ergodicity in quantum dynamics of generalized Fibonacci drives.*

Contributed talks

Jan 2026 Novena reunión anual del grupo de investigación en caos y termalización en sistemas cuánticos de muchos cuerpos 2026, ICN-UNAM. *Emergent classicality and quantum branching in a kicked top.*

Jun 2024 Non-equilibrium Many-body Physics Beyond the Floquet Paradigm, Max Planck Institute for the Physics of Complex Systems (MPIPKS), Dresden, Germany. *Critically slow Hilbert-space ergodicity in quantum morphic drives.*

Nov 2023 Chaos and information dynamics in quantum many body systems, Ettore Majorana Centre, Erice, Italy. *Complete Hilbert-space ergodicity in quantum dynamics of generalized Fibonacci drives.*

Jan 2023 Sexta reunión annual del grupo de investigación en caos y termalización en sistemas cuánticos de muchos cuerpos, Xalapa, Mexico. *Hilbert-space ergodicity in quasiperiodically driven systems.*

Feb 2021 Workshop on Many-Body Quantum Chaos 4, UNAM. Mexico City, Mexico. *Quantum scarring in a spin-boson system: fundamental families of periodic orbits.*

Jan 2020 Workshop on Many-Body Quantum Chaos 3, UNAM. Mexico City, Mexico. *Quantum vs classical dynamics in a spin-boson system: manifestations of spectral correlations and scarring.*

Jul 2019 Workshop on Many-Body Quantum Chaos 2, Charles University. Prague, Czechia. *Semiclassical and phase space methods for quantum evolution.*

Jan 2019 Workshop on Many-Body Quantum Chaos 1, UNAM. Mexico City, Mexico. *Quantum chaos through out-of-time ordered correlators and survival probabilities.*

Posters

Mar 2025 Simulation of far-from-equilibrium quantum many-body dynamics, Ludwig Maximilian University of Munich, Germany. *Quantum thermalizaton of translation-invariant systems at high temperature.*

Jan 2024 CUA Retreat. *Complete Hilbert-space ergodicity in the Fibonacci drive.*

Jun 2023 54th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics DAMOP. *Complete Hilbert-space ergodicity in the Fibonacci drive.*

Oct 2020 LXIII National Conference of the Mexican Society of Physics. Mexico City, Mexico. *Scarring and quantum ergodicity in a spin-boson system.*

Sep 2019 XII Reunion of the Division of Quantum Information of the Mexican Society of Physics, Puebla, Mexico. *The truncated Wigner approximation in the Dicke model.*

Teaching

— MIT, Teaching Assistant —

Fall 2025 **Quantum Information Science 3**.
Substitute lecturing, designing problem sets, grading.

Fall 2023 **Quantum Mechanics II**.
Office hours, teaching exercise sessions, managing graders.

Fall 2022 **Quantum Mechanics II**.
Office hours, managing graders.

— UNAM, Teaching Assistant —

Spring 2021 **Differential and Integral Calculus II**.
Teaching recitations, grading.

Fall 2020 **Differential and Integral Calculus I**.
Teaching recitations, grading.

Spring 2020 **Differential and Integral Calculus IV**.
Teaching recitations, grading.

Refereeing

Nature Communications.

Physical Review X.

Physical Review A.

Physical Review B.

Physical Review E.

Quantum Journal.

Journal of Physics A: Mathematical and Theoretical.

Quantum Information Processing (QIP) Conference, *2025, 2026*.