Luiz F. O. Chamon

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Positions

University of Stuttgart—Germany 2022–present
Independent research group leader (ELLIS–SimTech)

University of California, Berkeley—USA 2021–2022
Postdoctoral fellow at the Simons Institute for the Theory of Computing

University of Pennsylvania—USA 2020–2021
Postdoctoral researcher

Education

University of Pennsylvania—USA 2015–2020
Ph.D. in Electrical Engineering

- Thesis: Constrained learning and inference (Advisor: Alejandro Ribeiro).

Polytechnic School of the University of São Paulo—Brazil 2012–2015
M.Sc. in Electrical Engineering

- Dissertation: Combinations of Adaptive Filters (Advisor: Cássio Guimarães Lopes).

École Centrale de Lyon and **INSA-Lyon—France** 2009
Undergraduate exchange student of the M.Sc. in Acoustics program

Polytechnic School of the University of São Paulo—Brazil 2006–2011
B.Sc. in Electrical Engineering (Electronic Systems)

Research Experience

Polytechnic School of the University of São Paulo—Brazil 2015
Electronic Systems Engineering Department

- Design and prototype of an open source microphone array for acoustic imaging (**GitHub**).

Polytechnic School of the University of São Paulo—Brazil 2010–2013
Mechanical Engineering Department

- Responsible for designing and implementing the vibroacoustic system of a full-sized *aircraft cabin simulator* in collaboration with EMBRAER (Brazilian aeronautic industry).

Polytechnic School of the University of São Paulo—Brazil 2009–2011
Mechanical Engineering Department

- Student researcher in an auralization project with the *Institut für Technische Akustik*, RWTH, Germany.

Teaching/Mentoring

Women in STEM 2022
Judge of the **ENVISION research competition**

University of Pennsylvania 2018–2019
Mentor for the research experience for undergraduate program **SUNFEST**

University of Pennsylvania 2016–2020
TA and lecturer for the Stochastic Processes and Signal Processing undergraduate courses.

Polytechnic School of the University of São Paulo—Brazil 2013–2014
TA for the Stochastic Processes undergraduate course

- Created instructional videos that have accumulated over 450 followers and 140.000 views (**Youtube**—in Portuguese).

INSACAST Formation Continue—France 2009
Assistant instructor

- Taught undergraduate laboratories, certification workshops (COFREND and Dassault Aviation), and developed tutorials on ultrasonic nondestructive testing of concrete.

Awards & Fellowships

- **2020**: Best student paper award at IEEE ICASSP 2020 for "The empirical duality gap of constrained statistical learning."
- **2020**: Best paper award at IEEE ICASSP 2020 for "Better safe than sorry: Risk-aware nonlinear Bayesian estimation."
- **2018**: Best Ph.D. colloquium award (Dept. of Electrical and Systems Engineering, University of Pennsylvania).
- **2018**: Good citizen award for services to the department (Dept. of Electrical and Systems Engineering, University of Pennsylvania).
- **2018**: Outstanding editorial board service (IEEE Transactions on Signal Processing).
- **2013**: IEEE Standard Education Committee grant.
- Travel grants to major conferences, such as ICASSP, CDC, NeurIPS, and USENIX NSDI.

Invited Seminars

- **February 2023**: ELLIS/CIS Network Seminar (EPFL).
- **April 2022**: Young Investigators Lecture Series (Caltech).
- **January 2022**: Foundations of Data Science Institute (FODSI) retreat.
- **December 2021**: Deep Learning Theory Symposium (Simons Institute).
- **April 2021**: Microsoft Research.
- **March 2021**: Massachusetts Institute of Technology (MIT EECS).
- **February 2021**: Johns Hopkins Mathematical Institute for Data Science (MINDS).
- **February 2021**: Toyota Technological Institute at Chicago (TTIC).

Reviewer/Referee

- IEEE Trans. on Signal Processing; IEEE Signal Processing Letters; IEEE Signal Processing Magazine; IEEE Journal of Selected Topics in Signal Processing; IEEE Trans. on Signal and Information Processing over Networks; IEEE Trans. on Automatic Control; IEEE Trans. on Control of Network Systems; and conferences, such as NeurIPS, ICML, ICASSP, CDC…

Professional Experience

Statistical analyses consulting 2010–2015

- *Statistical consulting* for research projects in medicine, behavioral sciences, ergonomics, etc.

INSACAST Formation Continue—France 2009

- *Consultant* in the design of a crack detection system for Saint-Gobain.

National Institute for Space Research (INPE)—Brazil 2004

- *Laboratory assistant* of the *Satellite Power Supply Group*. Participated in solar cells tests, project revisions, and *power budget negotiations* with Chinese delegations.

Languages

- Fluent in *English* (TOEFL iBT: 114), *French*, and *Portuguese*.

Publications (Google scholar)

Preprints

[1] M. Calvo-Fullana, S. Paternain, **L. F. O. Chamon**, and A. Ribeiro. State augmented constrained reinforcement learning: Overcoming the limitations of learning with rewards, 2021. URL: https://arxiv.org/abs/2102.11941.

[2] L. Ruiz, **L. F. O. Chamon**, and A. Ribeiro. Transferability properties of graph neural networks, 2021. URL: https://arxiv.org/abs/2112.04629.

[3] **L. F. O. Chamon**, S. Paternain, and A. Ribeiro. Trust but verify: Assigning prediction credibility by counterfactual constrained learning, 2020. URL: https://arxiv.org/abs/2011.12344.

[4] **L. F. O. Chamon** and C. G. Lopes. Combination of LMS adaptive filters with coefficients feedback. *arXiv*, 2016. URL: https://arxiv.org/abs/1608.03248.

Patents

[1] D. Lamb, **L. F. O. Chamon**, V. H. Nascimento, and A. Spirer. Sparse cascaded-integrator-comb filters, 2019. URL: https://patents.google.com/patent/US10367477B2. US10367477B2.

Journals

[1] C. G. Lopes, V. H. Nascimento, and **L. F. O. Chamon**. Distributed universal adaptive networks. *IEEE Trans. on Signal Process.*, 71:1817–1832, 2023. URL: https://arxiv.org/abs/2307.05746.

[2] S. Paternain, M. Calvo-Fullana, **L. F. O. Chamon**, and A. Ribeiro. Safe policies for reinforcement learning via primal-dual methods. *IEEE Trans. on Autom. Control.*, 68[3], 2023. URL: https://arxiv.org/abs/1911.09101.

★ [3] **L. F. O. Chamon**, S. Paternain, M. Calvo-Fullana, and A. Ribeiro. Constrained learning with non-convex losses. *IEEE Trans. on Inf. Theory*, 69[3]:1739–1760, 2023. URL: https://arxiv.org/abs/2103.05134.

[4] **L. F. O. Chamon**, A. Amice, and A. Ribeiro. Approximately supermodular scheduling subject to matroid constraints. *IEEE Trans. on Autom. Control.*, 67[3]:1384–1396, 2022. URL: https://arxiv.org/abs/2003.08841.

[5] L. Ruiz, **L. F. O. Chamon**, and A. Ribeiro. Graphon signal processing. *IEEE Trans. on Signal Process.*, 69:4961–4976, 2021. URL: https://arxiv.org/abs/2003.05030.

[6] **L. F. O. Chamon**, G. J. Pappas, and A. Ribeiro. Approximate supermodularity of Kalman filter sensor selection. *IEEE Trans. on Autom. Control.*, 66[1]:49–63, 2021. URL: https://arxiv.org/abs/1912.03799.

[7] M. Peifer, **L. F. O. Chamon**, S. Paternain, and A. Ribeiro. Sparse multiresolution representations with adaptive kernels. *IEEE Trans. on Signal Process.*, 68[1]:2031–2044, 2020. URL: https://arxiv.org/abs/1905.02797.

★ [8] **L. F. O. Chamon**, Y. C. Eldar, and A. Ribeiro. Functional nonlinear sparse models. *IEEE Trans. on Signal Process.*, 68[1]:2449–2463, 2020. URL: https://arxiv.org/abs/1811.00577.

★ [9] M. Eisen, C. Zhang, **L. F. O. Chamon**, D. D. Lee, and A. Ribeiro. Learning optimal resource allocations in wireless systems. *IEEE Trans. on Signal Process.*, 67[10]:2775–2790, 2019. URL: https://arxiv.org/abs/1807.08088.

[10] **L. F. O. Chamon** and A. Ribeiro. Greedy sampling of graph signals. *IEEE Trans. on Signal Process.*, 66[1]:34–47, 2018. URL: https://arxiv.org/abs/1704.01223.

[11] D. Lamb, **L. F. O. Chamon**, and V. H. Nascimento. An efficient filtering structure for spline interpolation and decimation. *IET Electronics Letters*, 52[1]:39–41, 2016.

[12] H. F. Ferro, **L. F. O. Chamon**, and C. G. Lopes. FIR-IIR adaptive filters hybrid combination. *IET Electronics Letters*, 50[7]:501–503, 2014.

ML & Systems Conferences

[1] J. Cervino, **L. F. O. Chamon**, B. D. Haeffele, R. Vidal, and A. Ribeiro. Learning globally smooth functions on manifolds. In *International Conference on Machine Learning (ICML)*, 2023. URL: https://arxiv.org/abs/2210.00301.

[2] I. Hounie, **L. F. O. Chamon**, and A. Ribeiro. Automatic data augmentation via invariance-constrained learning. In *International Conference on Machine Learning (ICML)*, 2023. URL: https://arxiv.org/abs/2209.15031.

[3] A. Robey, **L. F. O. Chamon**, G. J. Pappas, and H. Hassani. Probabilistically robust learning: Balancing average- and worst-case performance. In *International Conference on Machine Learning (ICML)*, 2022. URL: https://arxiv.org/abs/2202.01136.

★ [4] A. Robey*, **L. F. O. Chamon***, G. J. Pappas, H. Hassani, and A. Ribeiro. Adversarial robustness with semi-infinite constrained learning. In *Conference on Neural Information Processing Systems (NeurIPS)*, 2021. URL: https://arxiv.org/abs/2110.15767. (* equal contribution).

[5] L. Ruiz, **L. F. O. Chamon**, and A. Ribeiro. Graphon neural networks and the transferability of graph neural networks. In *Conference on Neural Information Processing Systems (NeurIPS)*, 2020. URL: https://arxiv.org/abs/2006.03548.

[6] **L. F. O. Chamon** and A. Ribeiro. Probably approximately correct constrained learning. In *Conference on Neural Information Processing Systems (NeurIPS)*, 2020. URL: https://arxiv.org/abs/2006.05487.

★ [7] S. Paternain, **L. F. O. Chamon**, M. Calvo-Fullana, and A. Ribeiro. Constrained reinforcement learning has zero duality gap. In *Conference on Neural Information Processing Systems (NeurIPS)*, pages 7555–7565, 2019. URL: https://arxiv.org/abs/1910.13393.

[8] B. Arzani, S. Ciraci, **L. F. O. Chamon**, Y. Zhu, H. Liu, J. Padhye, B. T. Loo, and G. Outhred. 007: Democratically finding the cause of packet drops. In *USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, pages 419–435, 2018. URL: https://arxiv.org/abs/1802.07222.

[9] B. Arzani, S. Ciraci, **L. F. O. Chamon**, Y. Zhu, H. Liu, J. Padhye, G. Outhred, and B. T. Loo. Closing the network diagnostics gap with Vigil. In *SIGCOMM (Poster)*, pages 40–42, 2017.

[10] **L. F. O. Chamon** and A. Ribeiro. Approximate supermodularity bounds for experimental design. In *Conference on Neural Information Processing Systems (NeurIPS)*, pages 5403–5412, 2017. URL: https://arxiv.org/abs/1711.01501.

Control Conferences

[1] B. A. Angélico, **L. F. O. Chamon**, S. Paternain, A. Ribeiro, and G. J. Pappas. Source seeking in unknown environments with convex obstacles. In *American Control Conference*, 2021. URL: https://arxiv.org/abs/1909.07496.

[2] M. Calvo-Fullana, **L. F. O. Chamon**, and S. Paternain. Towards safe continuing task reinforcement learning. In *American Control Conference*, 2021. URL: https://arxiv.org/abs/2102.12585.

[3] **L. F. O. Chamon**, A. Amice, S. Paternain, and A. Ribeiro. Resilient control: Compromising to adapt. In *IEEE Control and Decision Conference*, 2020. URL: https://arxiv.org/abs/2004.03726.

[4] **L. F. O. Chamon**, S. Paternain, and A. Ribeiro. Counterfactual programming for optimal control. In *Learning for Dynamics & Control (L4DC)*, 2020.

[5] A. Tsiamis, D. S. Kalogerias, **L. F. O. Chamon**, A. Ribeiro, and G. J. Pappas. Risk-constrained linear-quadratic regulators. In *IEEE Control and Decision Conference*, 2020. URL: https://arxiv.org/abs/2004.04685.

[6] S. Paternain, M. Calvo-Fullana, **L. F. O. Chamon**, and A. Ribeiro. Learning safe policies via primal-dual methods. In *IEEE Control and Decision Conference*, pages 6491–6497, 2019.

[7] V. L. Silva, **L. F. O. Chamon**, and A. Ribeiro. Model predictive selection: A receding horizon scheme for actuator selection. In *American Control Conference*, pages 347–353, 2019.

[8] **L. F. O. Chamon**, A. Amice, and A. Ribeiro. Matroid-constrained approximately supermodular optimization for near-optimal actuator scheduling. In *IEEE Control and Decision Conference*, pages 3391–3398, 2019.

[9] **L. F. O. Chamon**, G. Pappas, and A. Ribeiro. The mean square error in Kalman filtering sensor selection is approximately supermodular. In *IEEE Control and Decision Conference*, pages 343–350, 2017.

Signal Processing Conferences

[1] L. Ruiz, **L. F. O. Chamon**, and A. Ribeiro. Transferable graph neural networks on large-scale stochastic graphs. In *Asilomar Conference on Signals, Systems and Computers*, 2021.

[2] D. S. Kalogerias, **L. F. O. Chamon**, G. J. Pappas, and A. Ribeiro. Better safe than sorry: Risk-aware nonlinear Bayesian estimation. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, 2020. URL: https://arxiv.org/abs/1912.02933.

[3] L. Ruiz, **L. F. O. Chamon**, and A. Ribeiro. Graphon filters: Signal processing in very large graphs. In *European Signal Processing Conference (EUSIPCO)*, pages 1050–1054, 2020.

[4] L. Ruiz, **L. F. O. Chamon**, and A. Ribeiro. The graphon Fourier transform. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, 2020. URL: https://arxiv.org/abs/1910.10195.

[5] **L. F. O. Chamon**, S. Paternain, M. Calvo-Fullana, and A. Ribeiro. The empirical duality gap of constrained statistical learning. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, 2020. URL: https://arxiv.org/abs/2002.05183.

[6] M. Eisen, C. Zhang, **L. F. O. Chamon**, D. D. Lee, and A. Ribeiro. Dual domain learning of optimal resource allocations in wireless systems. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, pages 4729–4733, 2019.

[7] M. Peifer, **L. F. O. Chamon**, S. Paternain, and A. Ribeiro. Sparse learning of parsimonious reproducing kernel Hilbert space models. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, pages 3292–3296, 2019.

[8] **L. F. O. Chamon**, Y. C. Eldar, and A. Ribeiro. Sparse recovery over nonlinear dictionaries. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, pages 4878–4882, 2019.

[9] **L. F. O. Chamon**, S. Paternain, and A. Ribeiro. Learning Gaussian processes with Bayesian posterior optimization. In *Asilomar Conference on Signals, Systems and Computers*, pages 482–486, 2019.

[10] M. Eisen, C. Zhang, **L. F. O. Chamon**, D. D. Lee, and A. Ribeiro. Online deep learning in wireless communication systems. In *Asilomar Conference on Signals, Systems and Computers*, pages 1289–1293, 2018.

[11] M. Peifer, **L. F. O. Chamon**, S. Paternain, and A. Ribeiro. Locally adaptive kernel estimation using sparse functional programming. In *Asilomar Conference on Signals, Systems and Computers*, pages 2022–2026, 2018.

[12] **L. F. O. Chamon**, Y. C. Eldar, and A. Ribeiro. Strong duality of sparse functional optimization. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, pages 4739–4743, 2018.

[13] **L. F. O. Chamon** and A. Ribeiro. Finite-precision effects on graph filters. In *IEEE Global Conference on Signal and Information Processing (GlobalSip)*, pages 603–607, 2017.

[14] **L. F. O. Chamon** and A. Ribeiro. Universal bounds for the sampling of graph signals. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, pages 3899–3903, 2017.

[15] **L. F. O. Chamon** and A. Ribeiro. Near-optimality of greedy set selection in the sampling of graph signals. In *IEEE Global Conference on Signal and Information Processing (GlobalSip)*, pages 1265–1269, 2016.

[16] C. G. Lopes, **L. F. O. Chamon**, and V. H. Nascimento. Towards spatially universal adaptive networks. In *IEEE Global Conference on Signal and Information Processing (GlobalSip)*, pages 803–807, 2014.

[17] **L. F. O. Chamon** and C. G. Lopes. There's plenty of room at the bottom: Incremental combinations of sign-error LMS filters. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, pages 7248–7252, 2014.

[18] **L. F. O. Chamon** and A. M. P. de Lucena. Determination of the minimum distance between symbols of the two non-orthogonal M-QAM carriers. In *Brazilian Telecommunication Symposium (SBrT)*, 2013.

[19] **L. F. O. Chamon** and C. G. Lopes. On parallel-incremental combinations of LMS filters that outperform the Affine Projection Algorithm. In *Brazilian Telecommunication Symposium (SBrT)*, 2013.

[20] **L. F. O. Chamon** and C. G. Lopes. Transient performance of an incremental combination of LMS filters. In *European Signal Processing Conference (EUSIPCO)*, pages 7298–7302, 2013.

[21] R. F. Bittencourt, **L. F. O. Chamon**, S. Futatsugui, J. I. Yanagihara, and S. N. Y. Gerges. Preliminary results on the modeling of aircraft vibroacoustic comfort. In *INTERNOISE*, 2012.

[22] **L. F. O. Chamon**, H. F. Ferro, and C. G. Lopes. A data reusage algorithm based on incremental combination of LMS filters. In *Asilomar Conference on Signals, Systems and Computers*, pages 406–410, 2012.

[23] **L. F. O. Chamon**, W. B. Lopes, and C. G. Lopes. Combination of adaptive filters with coefficients feedback. In *IEEE International Conference in Acoustic, Speech, and Signal Processing (ICASSP)*, pages 3785–3788, 2012.

[24] **L. F. O. Chamon** and C. G. Lopes. Combination of adaptive filters for relative navigation. In *European Signal Processing Conference (EUSIPCO)*, pages 1771–1775, 2011.

[25] **L. F. O. Chamon**, G. S. Quiqueto, S. R. Bistafa, and V. H. Nascimento. An SVD-based MIMO equalizer applied to the auralization of aircraft noise in a cabin simulator. In *18th International Congress on Sound and Vibration (ICSV)*, 2011.

[26] G. S. Quiqueto, **L. F. O. Chamon**, and S. R. Bistafa. Preliminary results on the development of an aircraft cabin N&V simulator. In *II SAE Brazil International Noise and Vibration Congress*, 2010.

[27] **L. F. O. Chamon**, G. S. Quiqueto, and S. R. Bistafa. The application of the Singular Value Decomposition for the decoupling of the vibratory reproduction system of an aircraft cabin simulator. In *II SAE Brazil International Noise and Vibration Congress*, 2010.