

## List of Publications

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ARXIV: <https://arxiv.org/search/?searchtype=author&query=Molter%2C+U>

### Full Journal papers - in back chronological order.

- (1) “Learning optimal smooth invariant subspaces for data approximation”. *Journal of Mathematical Analysis and Applications*, **538** (2), 1 – 20, (2024). (with Barbieri, D., Cabrelli, C. and Hernández, E.)
- (2) “Learning the model from the data”, *Revista de la Unión Matemática Argentina* Vol. **66**, nro 1, 141 – 152, (2023). (with Cabrelli, C.)
- (3) “Crystallographic Multi-wavelets in  $L^2(\mathbb{R}^d)$ ”. *Proceedings of the AMS*. **149**, Number 6, June 2021, 2445–2460, <https://doi.org/10.1090/proc/13998>, (with Quintero, Alejandro)
- (4) “Continuous and discrete dynamical sampling” *Journal of Mathematical Analysis and Applications* **499**, (2021). (with Díaz Martín, R. and Medri, I.)
- (5) “The structure of group preserving operators” *Sampl. Theory Signal Process. Data Anal.* **19**, 5, 28 p. (2021). (with Barbieri, D., Carbajal, D., Cabrelli, C. and Hernández, E.)
- (6) “Riesz bases of exponentials and the Bohr topology”. *Proceedings of the American Mathematical Society* **149**, Number 5, 2121–2131, (2021). (with Cabrelli, C. and Hare, K.)
- (7) “Multi-orbital frames through model spaces”. *Complex Analysis and Operator Theory* **15**, Issue 1 (2021). (with Cabrelli, C. and Suárez, D.)
- (8) “Approximation by group invariant subspaces” *Journal de Mathématiques Pures et Appliquées* **142**, 76 – 100, (2020). (with Barbieri, D., Cabrelli, C. and Hernández, E.)
- (9) “Dynamical Sampling on finite index sets”. *Journal D’Analyse Mathématique* **140** (2), 637–667(2020). (with Cabrelli, C., Paternostro, V. and Philipp, F.)
- (10) “Small Sets containing any Pattern”. *Mathematical Proceedings of the Cambridge Philosophical Society* **168**, no.1, (2020), 57–73 (with Yavicoli, A.)
- (11) “Approximation by crystal-refinable functions”. *Geometriae Dedicata*, **207**, 1–21 (2020). (with Moure, M.del C. and Quintero, A.)
- (12) “Time-frequency shift invariance of Gabor spaces generated by integer lattices”. *Journal of Mathematical Analysis and Applications* **474**(2) (2019), pp. 1289–1305 (with Cabrelli, C., Lee, D.-G. and Pfander, G.)
- (13) “Frames of exponentials and sub-multitiles in LCA groups”. *Comptes rendus - Mathématique*. Online version: <http://authors.elsevier.com/sd/article/S1631073X17303229>, (2017). (with Barbieri, Davide, Cabrelli, Carlos, Hernández, Eugenio, Luthy, Peter and Mosquera, Carolina)

- (14) “Iterative Actions of Normal Operators”. *Journal of Functional Analysis*, **272** (3) (2017) 1121-1146. (2016). (with Aldroubi, Akram, Cabrelli, Carlos, Çakmak, A. F. and Petrosyan, Armenak)
- (15) “Dynamical Sampling”. *Applied and Computational Harmonic Analysis*, **42**. (3) (2017) 378-401. (with Aldroubi, Akram, Cabrelli, Carlos and Tang, Sui)
- (16) “Time-frequency shift invariance and the Amalgam Balian–Low Theorem”. *Applied and Computational Harmonic Analysis*, **41** (3) (2016) 677 – 691. (with Cabrelli, Carlos and Pfander, Götz)
- (17) “Countable contraction mappings in metric spaces: Invariant Sets and Measures”. *Central European Journal of Mathematics*, **12** (4) (2014), 593602. (with Barrozo, María Fernanda)
- (18) “Non-uniform painless decompositions for anisotropic Besov and Triebel-Lizorkin spaces”. *Advances in Mathematics* **232** (2013), 98 - 120. (with Cabrelli, Carlos and Romero, José Luis)
- (19) “Small Furstenberg Sets”. *Journal of Mathematical Analysis and Applications* **400** (2013), 475 - 486. (with Rela, Ezequiel)
- (20) “Furstenberg sets for a fractal set of directions. *Proceedings of the AMS*. **140** (11), (2012), 2753 - 2765. (with Rela, Ezequiel)
- (21) “Frames by Multiplication”. *Current Developments in Theory and Applications of Wavelets*. **5**, (2-3), (2011). 165 - 186. (with Balazs, P., Cabrelli, C. and Heineken, S.)
- (22) “A dimension reduction scheme for the computation of optimal unions of subspaces.” *Sampling Theory in Signal and Image Processing*. **10** (1-2), (2011), 135 - 150. (with Anastasio, Magalí, Aldroubi, Akram and Cabrelli, Carlos)
- (23) “Classifying Cantor sets by their Fractal dimensions”. *Proceedings of the AMS*. **138** (11), (2010), 3965 - 3974. (with Cabrelli, C. and Hare, K.)
- (24) “Improving the Hausdorff dimension of Furstenberg sets”. *Advances in Mathematics*. **223** (2010), 672 - 688. (with Rela, Ezequiel)
- (25) “Invariance of a Shift invariant space”. *Journal of Fourier Analysis and Applications*, **16** (1) (2010) 60 - 75. (with Aldroubi, Akram, Cabrelli, Carlos, Heil, Christopher and Kornelson, Keri).
- (26) “Optimal non-linear models.” *Rev. Un. Mat. Argentina*, 50 (2009), no. 2, 217–225. (with Aldroubi, Akram y Cabrelli, C.)
- (27) “A fractal Plancherel Theorem”. *Real Analysis Exchange*. **14**,(34) 69-86, (2008/2009). (with Zuberan, L.)
- (28) “Optimal Non-Linear Models for Sparsity and Sampling”. *Journal of Fourier Analysis and Applications*, Special Issue on Sparsity. **14**, (2008), 793 - 812. (with Aldroubi, Akram, and Cabrelli, Carlos) .
- (29) “Perturbation Techniques in Irregular Spline-Type Spaces”. *International Journal of Wavelets, Multi-resolution and Information Processing*. **6** (2) (2007) 249-277. (with Feichtinger, Hans G., and Romero Jose Luis).

- (30) “Optimal shift invariant spaces and their Parseval frame generators”. *Appl. Comput. Harmon. Anal.* **23** no. 2, (2007), 273–283. (with Aldroubi, Akram, Cabrelli, Carlos, and Hardin, Douglas).
- (31) “Dimension functions of Cantor sets”. *Proc. Amer. Math. Soc.* **135** no. 10, (2007), 3151–3161. (with Garcia, Ignacio, and Scotto, Roberto).
- (32) “Density of the Set of Generators of Wavelets Systems”, *Constructive Approximation*, **26**, no. 1, (2006), 65–81. (with C. Cabrelli)
- (33) “Variations on the Theme of Journé’s Lemma”. *Houston Journal of Mathematics Electronic Edition* **32** (3) (2006) 833–861. (with Cabrelli, C., Lacey, M. and Pipher, J.).
- (34) “Local bases for refinable spaces”. *Proceedings of the AMS.* **134** (2006), 1707–1718. (with Cabrelli, C. and Heineken, S.)
- (35) “Geometric Methods in Wavelet Theory”, *Revista de la UMA*, **46** (2) (2005), 121–132. (with Cabrelli, C.)
- (36) “Refinable Shift Invariant Spaces in  $R^n$ ”. *International Journal of Wavelets, Multiresolution and Information Processing*. Special issue on “Sampling and Frames in Wavelet Theory and Time-Frequency Analysis” **3** (2005), no. 3, 321–345. (with Cabrelli, C. and Heineken, S.)
- (37) “Wavelets on Irregular Grids with arbitrary dilation matrices, and frame atoms for  $L^2(R^d)$ ”. *Applied and Computational Harmonic Analysis*. Special Issue on Frames. II, 119–140. 2004. (with Aldroubi, A. and Cabrelli, C.)
- (38) “On the Hausdorff  $h$ -measure of Cantor sets”. *Pacific Journal of Mathematics.* **217** (1), 45–59. 2004. (with Cabrelli, C., Mendivil, F. and Shonkwiler, R.)
- (39) “Hausdorff Measure of  $p$ -Cantor sets”. *Real Analysis Exchange*. In Press. 2003 (with Cabrelli, C., Paulauskas, V. and Shonkwiler, R.)
- (40) “Self-Similarity and Multiwavelets in higher dimensions”. *Memoirs of the American Mathematical Society.* **170** 82p., 2004. (with Cabrelli, C. and Heil, C.)
- (41) “Units of Measurement”. *International Journal of Mathematical Education in Science and Technology*, **33** (2) 293–299, 2002. (with Fava, N.)
- (42) “Sums of Cantor Sets yielding an interval”. *Journal of the Australian Math. Society, Series A.* **73**(3) 405–418, 2002. (with Cabrelli, C. and Hare, K.)
- (43) “Block-coding. A functional Approach”. *Computers and Mathematics with applications.* **44** (8–9): 1183–1200, 2002. (with Cabrelli, C. and Falsetti, M.)
- (44) “Accuracy of Multiple Refinable Distributions”, *Journal of Fourier Analysis and Applications*, **6** (5): 213–245, 2000. (with Cabrelli, C. and Heil, C.)
- (45) “A CoRD (Constructive Recursive Algorithm) for neural networks on the plane”, *IEEE, Transactions on Neural Networks*, **(4)**:345–356, 2000. (with Cabrelli, C. and Shonkwiler, R.)
- (46) “Generalized Self-Similarity”. *Journal of Mathematical Analysis and Applications.* **230**: 251–260, 1999. (with Cabrelli, C.)

- (47) “Accuracy of Lattice Translates of Several Multidimensional Refinable Functions”. *Journal of Approximation Theory*. **95**: 5 – 52, 1998. (with Cabrelli, C. and Heil, C.)
- (48) “A linear Time Algorithm for the computation of the Kantorovich Distance on the Circle”. *Information Processing Letters*, 66 (3): 161 – 164, 1998. (with Cabrelli, C.)
- (49) “Computing the Hausdorff Distance between curves”. *Information Processing Letters*, 64 (1): 17–22, 1997. (with Belogay, E., Cabrelli, C. and Shonkwiler, R.)
- (50) “Sums of Cantor Sets”. *Ergodic Theory and Dynamical Systems*, 17 (6): 1299–1313, 1997. (with Cabrelli, C. and Hare, K.)
- (51) “Wavelet Transform of the Dilation Equation”. *Journal of the Australian Mathematical Society, Series B*, 37: 474 – 489, 1996. (with Cabrelli, C.)
- (52) “Matching Probability Measures under Translations”. *Random and Computational Dynamics*, 3(3): 121–135, 1995. (with Barahona, F. and Cabrelli, C.)
- (53) “The Kantorovich metric for probability measures on the unit circle”. *Journal of Computational and Applied Mathematics*, 57: 345–361, 1995. (with Cabrelli, C.)
- (54) “Iterated fuzzy set systems: A new approach to the inverse problem for fractals and other sets”. *Journal of Mathematical Analysis and Applications*, 171:79–100, 1992. (with Cabrelli, C., Forte, B. and Vrscay, E.)
- (55) “Computing the Hutchinson distance by network flows methods”. *Random and Computational Dynamics*, 1(1):117–129, 1992. (with Barahona, F. and Cabrelli, C.)
- (56) “An algorithm for the computation of the Hutchinson distance”. *Information Processing Letters*, 40(2):113–117, 1991. (with Brandt, J. and Cabrelli, C.)
- (57) “Automatic representation of binary images”. *IEEE: Pattern Analysis and Machine Intelligence*, 12(12):1190–1196, 1990. (with Cabrelli, C.)
- (58) “Tangential Measures on the Set of Convex Infinite Cylinders”. *Journal of Applied Probabilities*, 23:961–972, 1986.
- (59) “Tangential measures on convex bodies in  $E^3$ ” (in Spanish). *Matematica Notae*, 1987.
- (60) “A Generalization of the fundamental Formula for Cylinders”. *Revista de la UMA*, 32(4), 1987.

### Book-Chapters.

- (60) “Frames of iterations and vector-valued model spaces”. In *Sampling, Approximation, and Signal Analysis (Harmonic Analysis in the Spirit of J. Rowland Higgins)*, (2024) 329 – 349. (with Cabrelli, C. and Suárez, D.)
- (61) “Dynamical Sampling: a view from control theory”. En *Excursions in Harmonic Analysis*, Vol. **6** (2021) 269 – 295. (with Díaz Martín, R., Medri, I.)
- (62) “Local to global frames and applications to the dynamical sampling problem”. En *Excursions in Harmonic Analysis*, Vol. **6** (2021) 211 – 220. (with Aldroubi, A., Cabrelli, C. and Petrosyan, A.)

- (63) “Data approximation with time-frequency invariant systems”. En *Landscapes of Time-Frequency Analysis*. pp. 29–42 (2020) (with Barbieri, D., Cabrelli, C. y Hernández, E.)
- (64) “Optimal translational-rotational invariant dictionaries for images”. En *2019 Proceedings of SPIEE 2019*. (2019) (en colaboración con D. Barbieri, C. Cabrelli y E. Hernández)
- (65) “Finite Sensor Dynamical Sampling”. In *12th International Conference on Sampling Theory and Applications, SampTA 2017, Tallin, Estonia*; (2017) IEEE Xplore, Pages 50–54, (with Cabrelli, C., Paternostro, V. and Philipp, F.)
- (66) “Extra invariance and Balian-Low type obstructions for Gabor spaces”. In *12th International Conference on Sampling Theory and Applications, SampTA 2017, Tallin, Estonia*; (2017) IEEE Xplore, Pages 391–395, (with Cabrelli, C., Lee, D. G. and Pfander, G.)
- (67) “An Amalgam Balian-Low Theorem for symplectic lattices of rational density”. In *2015 International Conference on Sampling Theory and Applications, SampTA*. (2015): pp. 134–138 (with Cabrelli, C. and Pfander, G.)
- (68) “Visible and Invisible Cantor Sets”. Invited Chapter in *Excursions in Harmonic Analysis. (Vol II)*. Travis Andrews, Radu V. Balan, John J. Benedetto, Wojciech Czaja, and Kasso Okoudjou, eds., Springer, Hamburg, (2013): 11 – 23. (with Cabrelli, C. and Darji, U.)
- (69) “Learning the Right Model from the Data”. Invited Chapter in *Harmonic Analysis and Applications. In Honor of John J. Benedetto*. C. Heil, ed., Birkhäuser, Boston, (2006): 325 – 334. (with Aldroubi, A. and Cabrelli, C.)
- (70) “How to construct Wavelet Frames on irregular grids and arbitrary dilations in  $R^n$ ”. Invited Chapter in *Wavelets, Frames and Operator Theory*. C.Heil, P. Joergensen, D. Larson eds. *Contemporary Mathematics*. (345) 1 – 9, 2004. (with Aldroubi, A. and Cabrelli, C.)
- (71) “Determining Sets of Shift Invariant Spaces”. In *Wavelets and their Applications (Chennai, January 2002)*, M. Krishna, R. Radha and S. Thangavelu, eds., Allied Publishers, New Delhi, 132-151, 2003. (with A. Aldroubi, C. Cabrelli, D. Hardin and A. Rodado).
- (72) “Multiwavelets in  $R^n$  with an arbitrary dilation matrix”. Invited Chapter in *Wavelets and Signal Processing*, L. Debnath editor, Birkhäuser, Basel, 23 – 39, 2003.(with Cabrelli, C. and Heil, C.)
- (73) “Integral Equation between the Distribution of Sizes of Corpuscles in a Solid and the Distribution in its sections by  $k$ -planes”. Invited Chapter in *Homenatge al professor Lluís Santaló i Sors*. C. Barceló i Vidal (ed.). Universitat de Girona. 81 – 89, 2002.
- (74) “Necessary conditions for the existence of multidimensional refinable functions”. Invited Chapter in *Wavelets in Image and Signal Processing*, A.Aldroubi, M.Laine, M.Unser editors. Proceedings of SPIEE 2000. (with Cabrelli, C. and Heil, C.)
- (75) “Polynomial Reproduction by Refinable Functions”. Invited Chapter in *Advances in Wavelets*, K.-S. Lau editor, Springer Verlag, New York, 121 – 163, 1999. (with Cabrelli, C. and Heil, C.)
- (76) “Density of fuzzy attractors: A step towards the solution of the inverse problem for fractals and other sets”. In J.S. Byrnes, editor, *Proceedings of the NATO ASI on Probabilistic and Stochastic methods in analysis with applications*, J.S. Byrnes, editor, Kluwer Academic Publishers, 163 – 173, 1992. (with Cabrelli, C.)

- (77) “Recurrent iterated function systems: Invariant measures, a collage theorem and moment relations”. In *Fractal in the Fundamental and Applied Sciences*, H.-O. Peitgen, J.M. Henriques & L.F.Penedo (Editors), Elsevier Science Publishers B.V. (North-Holland), pp.71–80, 1991. (with Cabrelli, C. and Vrscay, E.)

### Edited Books.

- “New Trends in Applied Harmonic Analysis Vol. 2: Harmonic Analysis, Geometric Measure Theory and Applications”. *Applied and Numerical Harmonic Analysis 75*, Aldroubi, A., Cabrelli, C., Jaffard, S. and Molter, U. eds. **Springer**, 2019.
- “New Trends in Applied Harmonic Analysis: Sparse Representations, Compressed Sensing, and Multifractal Analysis”. *Applied and Numerical Harmonic Analysis 75*, Aldroubi, A., Cabrelli, C., Jaffard, S. and Molter, U. eds. **Springer**, 2016.

### Non-Refereed Publications.

- “¿Ondículas, Wavelets? Una buena señal” (in spanish), *Ciencia Hoy*, **16** (95) (2006), 22 – 34.(with C. Cabrelli)
- “A Portrait of Dr. Luis A. Santaló”. (in spanish) *Revista de la Unión Matemática Argentina*. **42** (2), 113 – 145, 2002. (with Gysin, L.)
- “Al Dr. Luis A. Santaló”. In *Entre Argentina y España: unas historias matemáticas para el recuerdo*, Benítez, J. L., Alsina, C., Balbuena Castellano, L. and Perez Jiménez, A., editors. 2003. (with Gysin, L.)
- “Algunas Notas sobre la Forma de Jordan”. *Department of Mathematics, University of Buenos Aires*, **Notas de Matemática**, **1**, 1994.
- “Integral Equation between the Distribution of Sizes of Corpuscles in a Solid and the Distribution in its Sections by  $k$ -planes”. *Department of Mathematics Preprint Series, University of Buenos Aires*, **54**, 1983.