

Marc Vidal

Dep of Data Analysis, Ghent University

Dep of Neurology, Max Planck Institute for Human Cognitive and Brain Sciences

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LINKS: [Github](#) [ORCID](#) [Google scholar](#) [Scopus](#) [WS](#) [Math Genealogy](#)

Academic positions

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| 2024–Pres | Postdoc/Research Associate Dep of Data Analysis, Ghent University |
| 2022–Pres | Guest Researcher Research Group Music Evoked Brain Plasticity, Dep of Neurology Max Planck Institute for Human Cognitive and Brain Sciences |
| 2020–2024 | PhD Fellow IPEM Institute, Ghent University Dep of Statistics and Institute of Mathematics, University of Granada |

Publications

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| 2025 | Vidal, M. , Leman, M., Aguilera, A. M. Functional independent component analysis by choice of norm: a framework for near-perfect classification. Accepted in: <i>Advances in Data Analysis and Classification</i> . |
| – | Vidal, M. , Aguilera, A. M. Wavelet thresholding on independent subspace factorizations of spatially indexed wide functional data for robust estimation of cortical activity. Accepted in: <i>Mathematics and Computers in Simulation</i> . |
| 2023 | Vidal, M. , Onderdijk, K. E., Aguilera, A. M., Six, J., Maes, P.-J., Fritz, T. H., Leman, M. Cholinergic-related pupil activity reflects level of emotionality during motor performance. <i>European Journal of Neuroscience</i> , 59(9):2193–2207. DOI: 10.1111/ejn.15998 |
| – | Vidal, M. , Aguilera, A. M. pfica: Independent components analysis techniques for functional data. R Foundation for Statistical Computing. Package Version 0.1.3. |
| – | Moura, N., Vidal, M. , Aguilera, A. M., Vilas-Boas, J.P., Serra, S., Leman, M. Knee flexion of saxophone players anticipates tonal context of music. <i>npj Science of Learning</i> , 8(22). DOI: 10.1038/s41539-023-00172-z |
| 2022 | Vidal, M. , Aguilera, A. M. Novel whitening approaches in functional settings. <i>Stat</i> , 12(1):e516. DOI: 10.1002/sta4.516 Erratum: follow this link . |
| 2021 | Vidal, M. , Rosso, M., Aguilera, A. M. Bi-smoothed functional independent component analysis for EEG artifact removal. <i>Mathematics</i> , 9(11):1243. DOI: 10.3390/math9111243 Updated version: follow this link . |

Working papers

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| 2025 | Vidal, M. , Moura, N., Aguilera, A. M., Fritz, T. H., Leman, M. <i>Modeling emotional arousal with turbulence measured by EEG</i> . |
| – | Rosseel, Y., Vidal, M. <i>A tutorial for understanding SEM using R: Where do all the numbers come from?</i> |

Conferences

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| 2025 | Vidal, M. , Aguilera, A.M. Multivariate functional independent component analysis for modelling turbulent flows on the cortical field. In: Advanced models in functional data analysis for brain function . Presented at the 65th ISI World Statistics Congress, The Hague, Netherlands. [Organized session - Invited talk] |
| – | Vidal, M. , Aguilera, A.M. Spatio-temporal functional ICA for the analysis of non-Gaussian random flows. Presented at IES 2025, Innovation & Society: Statistics and Data Science for Evaluation and Quality. University of Padova Bressanone-Brixen, Italy. [Invited talk] |
| – | Vidal, M. , Rosseel, Y. Towards a structural after measurement model for functional data. Presented at the 2025 Meeting of the Structural Equation Modeling. University of Technology Chemnitz, Chemnitz, Germany. [Contributed talk] |
| 2024 | Vidal, M. , Aguilera, A.M. Some properties of ICA in infinite-dimensional settings. 18th Conference International Joint Conference on Computational and Financial Econometrics (CFE) and Computational and Methodological Statistics (CMStatistics). King's College London, London. [Invited talk] |
| – | Vidal, M. On the underlying principles of functional classification problems. The 31 st Annual Meeting of the Royal Statistical Society of Belgium. Ghent University, Ghent, Belgium. [Contributed talk] |
| – | Vidal, M. Functional data analysis for complex neuroscientific data . Presented at the Institute of Mathematics, University of Granada, Granada, Spain. [Invited talk] |
| – | Vidal, M. , Aguilera, A.M. Wavelet spatial ICA for wide functional data. Presented at the II Joint Workshop on Functional Data Analysis and Nonparametric Statistics, Universidad Autónoma de Madrid, Miraflores de la Sierra, Spain. [Contributed talk] |
| – | Vidal, M. , Leman, M., Aguilera, A.M. Classification of neuroscientific data under the probabilistic principles of near-perfect classification. 18th Conference of the International Federation of Classification Societies, University of Costa Rica, San José, Costa Rica. [Invited talk] |

- **Vidal, M.** [Mathematical modelling of brain arousal systems using functional data approaches based on ICA](#). Presented at the Patricia Román conference series in statistics and data science, Institute of Mathematics and Department of Statistics and O.R., University of Granada, Granada, Spain. [Invited talk]
- **Vidal, M.,** Aguilera, A.M. Multivariate functional ICA for spatially indexed data. Presented at the fda-lille: Functional Data Analysis Workshop, Centre Inria of Lille University, Lille, France. [Invited talk]
- 2023 **Vidal, M.,** Aguilera, A.M. Wavelet-based sparse optimization via fixed-point iteration scheme in high-dimensional data analysis. Presented at the 21st IMACS World Congress, University “La Sapienza”, Rome, Italy. [Invited talk]
- **Vidal, M.,** Aguilera, A. M. Smoothed functional principal/independent components: computational and theoretical considerations. Presented at the 64th ISI World Statistics Congress, Ottawa, Canada. [Contributed talk]
- Vidal, M.,** Aguilera, A. M. Some properties of whitening transformations in function spaces. Presented at the 40th Annual Congress of the Spanish Statistical Society, University Miguel Hernández, Elche, Spain. [Invited talk]
- 2022 **Vidal, M.,** Onderdijk, K. E., Aguilera, A. M., Six, J., Maes, P.-J., Fritz, T., Leman, M. Measuring arousal with pupil dilation during experience of musical agency. Presented at the 2nd Conference on Music & Eye-Tracking, Max Planck Institute for Empirical Aesthetics, Frankfurt, Germany. [Contributed talk]
- **Vidal, M.,** Aguilera, A. M. On the independent components model for functional data. Presented at the 39th Annual Congress of the Spanish Statistical Society, Institute of Mathematics, Granada, Spain. [Contributed talk]
- 2021 **Vidal, M.,** Leman, M., Aguilera, A. M., Fritz, T. Neuromodulatory effects of movement during auditory-motor tasks. Presented at the 17th Annual Neuromusic VConference, McMaster University, Hamilton, Canada. [Contributed poster]
- **Vidal, M.,** Aguilera, A. M., Leman, M., Vindas, J. Estimation process in Hilbertian independent component analysis models. Presented at the 28th Annual meeting of the Royal Statistical Society of Belgium, University of Liège, Liège, Belgium. [Contributed poster]
- **Vidal, M.,** Aguilera, A. M. Independent component analysis techniques for functional data. Presented at the 5th International Workshop on Functional and Operatorial Statistics, Brno, Czech Republic. [Contributed poster]

Education

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| 2020–2024 | Joint PhD in Art Science and Mathematical and Applied Statistics (CUM LAUDE) ~ Ghent & Granada Universities Thesis: Hilbertian statistical models in music neuroscience Advisors: Prof. A. M. Aguilera, Prof. M. Leman and Prof. T. H. Fritz |
| 2018–2020 | MSc in Mathematical and Applied Statistics (hons, first-class) ~ University of Granada |
| 2004–2010 | B. and MEd. in Music ~ Catalonia College of Music |
| 2000–2004 | Technical studies (major in mathematics and physics) ~ laSalle Barcelona |

Teaching experience

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| Jan 2024 | – Dimensionality reduction methods , Flames course, Ghent University, Ghent, Belgium. |
| Nov 2023 | – Course in functional statistics , Ghent University, Ghent, Belgium. Lecture contents: probability principles, curve approximation (Fourier, B-spline, Wavelets), functional PCA and inference with functional data. |
| 2013–2020 | – Tenured lecturer , Conservatory of Music, Granollers, Spain. Subjects: music theory, piano. Coordination of the Music Theory Department |

Merits

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| 2024 | Postdoctoral fellowship "María de Maetzu" . Institute of Mathematics, University of Granada. |
| 2024 | Postdoctoral fellowship FWO project . Ghent University and Flemish Government. |
| 2024 | Faculty travel Grant , Ghent University |
| 2024 | Invited research contract . Max Planck Institute for Human Cognitive and Brain Sciences. |
| 2023 | Doctoral schools fellowship , Ghent University and Flemish Government. |
| 2022 | Invited research contract . Max Planck Institute for Human Cognitive and Brain Sciences. |
| 2020 | PhD Fellowship in Art Science Research, Ghent University and Flemish Government. |
| 2019 | International Master Studies Scholarship , University of Granada, Erasmus+. |
| 2016 | First Prize at “Frederic Mompou” International Composition Award. |

Service to profession

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| As a reviewer | Applied Sciences, Biosensors, Brain Sciences, Communications in Statistics, European Journal of Neuroscience, Journal of Computational and Graphical Statistics, Musicae Scientiae, Sensors, Signal Processing (Elsevier) |
| As associate editor | Musicae Scientiae (since 2022, SAGE Q1 IF: 2.4) |
| Event organization | – Symposium “Music interactions and advanced statistical models”, Ghent University (main organizer). – Workshop “Functional data analysis and applications in digital and augmented humanities”, Ghent University (main organizer). Invited researchers: J. Beran, A. Caponera, I. Daubechies and A. Menafoglio. |

Skills

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| Languages | Spanish (native), Catalan (native), English (C2, certificate date: 06-2019, place: UGR) |
| Operating systems | macOS, Linux |
| Programming languages | R, Python, LATEX, C/C++, HTML, Matlab |