

Maria C. Mannone, Ph.D.

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Nationality: Italian; **date and place of birth:** 10/18/1985, in Palermo, Italy

Awards: University of Minnesota, Doctoral Dissertation Fellowship
U of M, Interdisciplinary Doctoral Fellowship, Fine Institute of Theoretical
Physics; U of M, School of Music Fellowship

Academic accomplishments: *Summa cum laude* in Theoretical Physics

Degrees

Ph.D.

Music Composition, University of Minnesota, May 6 2017

Thesis title: "Musical Gestures between Scores and Acoustics: A Creative Application to Orchestra"

Doctoral committee: Prof. Alex Lubet (Advisor, composer), Prof. Mikhail Shifman (theoretical physicist), Prof. David Walsh (Opera director), Prof. Maja Radovanlija (music performer).

Master 2 ATIAM (Acoustics, Signal Processing and Computer Science applied to Music), equivalent to 'Laurea Magistrale'

IRCAM – UPMC Paris VI Sorbonne, 9/9/2013; Marks: 12.30/20

Thesis title: "Segmentation de series temporelles pour l'orchestration automatique"

Advisor: prof. Carlos Agon

Master in Orchestral Conducting (Diploma V.O.)

Conservatorio di Musica "Vincenzo Bellini", Palermo, 7/4/2012; Marks: 10/10

Advisor: prof. Carmelo Caruso

Master in Theoretical Physics (Laurea Magistrale in Fisica Teorica)

Università degli Studi di Palermo, 3/28/2012; Marks: 110/110 *summa cum laude*, and thesis mentioned for the Prize Gugino competition

Thesis title (translated into English): "Master Equation under the action of Random External Fields, and Measures of Non- Markovianity" (*containing applications of non-Markovianity dynamics to musical structures*)

Advisor: prof. Giuseppe Compagno

Bachelor in Physics (Laurea in Fisica)

Università degli Studi di Palermo, 11/12/2009; Marks: 97/110

Thesis title: "Dynamics of violation of Bell's inequalities in open quantum systems"

Advisor: prof. Giuseppe Compagno

Master in Composition (Diploma V.O.)

Conservatorio di Musica "Vincenzo Bellini", Palermo, 10/1/2009; Marks: 9/10

Advisor: prof. Marco Betta

Master in Piano (Diploma V.O.)

Conservatorio di Musica "Vincenzo Bellini", Palermo, 9/25/2008; Marks: 10/10

Advisor: prof. Renato Giarrizzo

High-School

Ginnasio-Liceo Classico Statale “Vittorio Emanuele II”, Palermo, 7/1/2004; Marks: 100/100

Books and Book Chapters

M. Mannone, “Theoretical Physics and Category Theory as Tools for Analysis of Musical Performance and Composition,” in *Mathematical Music Theory: Algebraic, Geometric, Combinatorial, Topological and Applied Approaches to Understanding Musical Phenomena*, eds. M. Montiel and R. W. Peck (World Scientific, 2018) to be published

M. Mannone, “Can Mathematical Music Theory be Easily Learnt and also be Fun?” In *Theoretical and Practical Pedagogy of Mathematical Music Theory: Music for Mathematics and Mathematics for Musicians, From School to Postgraduate Levels*, eds. M. Montiel and Francisco Gómez (World Scientific, 2018) to be published

M. Mannone, *Mathematics, Nature, Art*, in progress

G. Mazzola, R. Guitart, J. Ho, A. Lubet, **M. Mannone**, M. Rahaim, F. Thalmann, *The Topos of Music III: Gestures*, Springer Series Computational Music Science, 2018

G. Mazzola, **M. Mannone**, Y. Pang, M. O’ Brien, N. Torunsky, *All About Music: The Complete Ontology: Realities, Semiotics, Communication, and Embodiment*, Springer Series Computational Music Science, 2016

G. Mazzola, **M. Mannone**, Y. Pang, *Cool Math for Hot Music*, Springer Series Computational Music Science, Heidelberg et al., 2016

M. Mannone, *Dalla Musica all’Immagine, dall’Immagine alla Musica - Relazioni matematiche fra composizione musicale e arte figurative (From Music to Images, from Images to Music – Mathematical relations between musical composition and figurative art)*, Edizioni Compostampa, Palermo, 2011

International Publications

D. Rocchesso and **M. Mannone**, *Embryo of a Quantum Vocal Theory of Sound*, CIM Conference, Udine, Italy, to appear 2018

M. Mannone, *Artist’s Statement: Some Parametric Art*, accepted for publication, The STEAM Journal, 2018

M. Mannone, E. Kitamura, J. Huang, R. Sugawara, and Y. Kitamura, *Musical Combinatorics, Tonnetz, and the CubeHarmonic*, Journal of Collected papers of Academy of Arts, Sixth Issue, pp. 104-116, Zbornik, Serbia, 2018, <https://scindeks-clanci.ceon.rs/data/pdf/2334-8666/2018/2334-86661806104M.pdf>

M. Mannone, *Have Fun with Math and Music!*, invited contribution, Mathematics and Computation in Music Conference, to appear 2019

M. Mannone, *cARTegory Theory: framing Aesthetics of Mathematics*, accepted for publication, Journal of Humanistic Mathematics, 2018

M. Mannone, E. Kitamura, J. Huang, R. Sugawara, and Y. Kitamura, *CubeHarmonic: A New Interface from A Magnetic 3D Motion Tracking System to Music Performance*, Proceedings of the International Conference on New Interfaces for Musical Expression, editors Luke Dahl, Douglas Bowman, Thomas Martin, Virginia Tech, pp. 350-351, http://www.nime.org/proceedings/2018/nime2018_paper0076.pdf

M. Mannone, *Introduction to Gestural Similarity in Music. An Application of Category Theory to the Orchestra*, Journal of Mathematics and Music, 12 (2), pp. 63-87, 2018, <https://www.tandfonline.com/doi/full/10.1080/17459737.2018.1450902>

M. Mannone, *Knots, Music, and DNA*, Journal of Creative Music Systems, March 2018, <https://www.jcms.org.uk/article/id/523/>

M. Mannone, K. Gkoudina, E. Tyler, *Narrating the Origin of the Universe through the Music: a Case Study*, Journal of Collected papers of Academy of Arts, Fifth Issue, pp. 110-119, Zbornik, Serbia, 2017, <http://scindeks-clanci.ceon.rs/data/pdf/2334-8666/2017/2334-86661705110M.pdf>

A video abstract is available: <https://www.youtube.com/watch?v=-Mb6FnGDZiI>

M. Mannone, *Networks of Music and Images*, “Gli Spazi della Musica,” University of Torino, 6 (2), 2017 <http://www.ojs.unito.it/index.php/spazidellamusica/article/view/2528>

M. Mannone, *Marco Orsini conducts Music without Seeing*, American Council of the Blind, ACB E-Forum Volume LV June 2017 No.12, <http://acb.org/content/acb-e-forum-volume-lv-june-2017-no-12>

M. Mannone, *Mathematics, Art, and Cognitive Sciences: Some Examples of Connection*, Proceedings of the Conference of the International Journal of Arts and Sciences, University of Catania, Italy, May 29 2017, 10 (2), 233-238, <http://www.universitypublications.net/proceedings/1002/pdf/S7Y131.pdf>

G. Mazzola and **M. Mannone**, *Global Functorial Hypergestures over General Skeleta for Musical Performance*, Journal of Mathematics and Music, 2016, <http://dx.doi.org/10.1080/17459737.2016.1195456>

M. Mannone and G. Mazzola, *Hypergestures in Complex Time: Creative Performance Between Symbolic and Physical Reality*. Springer proceedings of the MCM15 conference, 2015

G. Mazzola and **M. Mannone**, *Hegel's Conceptual Group Action on Creative Dynamics in Music*, Gli spazi della musica, University of Torino (2014)

M. Mannone, R. Lo Franco and G. Compagno, *Comparison of non-Markovianity criteria in a qubit system under random external fields*, Physica Scripta, Phys. Scr. T153 (2013) 014047

M. Mannone and G. Compagno, *Characterization of the degree of non-Markovianity in Musical Composition* ArXiv <https://arxiv.org/abs/1306.0229>

Selected Italian Publications

M. Mannone and D. Passaro, *Matematica, Arte e Coding*, Archimede, forthcoming 2018

M. Mannone, *Il corso di ascolto e teoria musicale al Liceo Classico “G. Meli,”* in: *L'insegnamento musicale a livello di base*, “Quaderni del Toscanini” (*Course of listening and musical theory, basic level*, “Books of the ‘Toscanini’”), Piccola biblioteca musicale Ars Nova, Palermo, 2012

M. Mannone, “*Forme e funzioni matematiche come collegamento fra le arti visive e musicali: un'ipotesi di reversibilità parziale*,” Atti del Convegno *Composizione Musica Architettura (Mathematical forms and functions as a link between visual and musical arts: an hypothesis of partial reversibility)*, Proceedings of the Conference *Composizione Musica Architettura*, Casa Editrice Libria, Dicembre 2013

Publications under review

M. Mannone and F. Favali, *Categories, Musical Instruments, and Drawings: A Unification Dream*, under review

M. Mannone, I. Iaccarino, and R. Iembo, *Dense Geometry of Music and Visual Arts: Vanishing Points, Continuous Tonnetz, and Theremin Performance*, under review

M. Acuña and **M. Mannone**, *Visual and Auditory Cognition: a Dialogue between Arts and Science*, under review

Lectures

“*Nature, Music, Maths, Coding (Composing Sound to Image)*,” **lecture and workshop with students**, October 5 2018, Greenwich University, London, UK

“*Music from Nature: a Mathematical Journey*,” October 4 2018, Queen Mary University, London UK

“*How does a water lily sound? What could be the music of ammonites? A journey between mathematics, music, and nature*,” October 3 2018, Open University, Milton Keynes, UK

“*Strutture condivise e trasformazioni in matematica e musica: dalle categorie alla musicologia*” (with F. Favali), video with my voice, slides, and pictures, ESCOM Giornata di studio italiana, campus Trigoria, Roma, June 28 2018

“*A Dialogue between Mathematics and Art: Interface, Concepts, Applications*,” January 24 2018, Goldsmiths University, London, UK

“*MathemArt: presentarlo con i fiori. Un'introduzione alle connessioni fra teoria delle categorie, musica e arti visive*,” January 18 2018, Physics Department — DIFTER, Università degli Studi di Palermo, Palermo, Italy

“*Categories and Arts: Some cARTEgory Theory of Music and Visual Arts*,” January 10 2018, Joint Mathematics Meetings, special session on Mathematics and the Arts, San Diego, USA

Lecture and workshop with students, “*Similarità gestuali: l'interpretazione musicale e il dialogo interdisciplinare*”, December 20 2017, Music Conservatory “V. Bellini” of Palermo, Italy

“*MathemArt: presentarlo con i fiori. Un'introduzione alle connessioni fra teoria delle categorie, musica e arti visive*,” December 6 2017, Mathematics Department, Università degli Studi di Palermo, Palermo, Italy

“*Music, Information, Expressivity*,” November 22 2017, RIEC, Tohoku University, Sendai, Japan

“*Sound, Image, Gestures, and Mathematics. New translation strategies between arts*,” November 11 2017, Sound and Image Colloquium, University of Greenwich, London, UK

“*Math, Music, and Visual Arts: some examples of connection*,” June 21 2017, RIEC, Tohoku University, Sendai, Japan

“*Composition and Orchestration Revisited. Musical Gestures as a Bridge between Scores and Acoustics*,” Composers' Rostrum, May 17 2017, Conservatory of Palermo, Italy

“*Math helps Art, Art helps Math*,” Northern Kentucky University, USA, April 14 2017

Lecture & Recital, “*Mathematics and Music: an Italian Perspective*,” University of Minnesota, in collaboration with the Italian Cultural Center of Minneapolis & St. Paul, USA, March 29 2017

“*Mathematical Theory of Gestures to Connect Music and Visual Arts*,” Spring Symposium 2017, Music and Sound Studies Group, University of Minnesota, USA, March 25 2017

“*Theoretical Physics and Category Theory as Tools for Analysis of Musical Performance and Composition*,” Joint Mathematics Meetings, Special Session on Mathematics and Music, Atlanta, USA, January 6 2017

“*The Pianist’s hand, the Conductor’s Baton, and Theoretical Physics: The Paradigm of String Theory in Musical Gestures of Performance and Composition*”, Interdisciplinary Doctoral Fellowship Seminar, March 2 2016, University of Minnesota, USA, and **Poster** (May 6)

(signed also by G. Mazzola), “*Physical String Theory for Creative Gestural Performance and Composition in Music*”, International Conference on Musical Gesture as Creative Interface, March 2016, Porto, Portugal

“*The Hand of the Pianist, the Baton of the Conductor, and Theoretical Physics: The Paradigm of String Theory in Musical Gestures of Performance and Composition*,” Conservatory of Palermo, Italy, July 2 2015

“*A new approach to Musical Performance and Composition: Complex Time connecting Symbolic and Physical Reality*,” University of Palermo, Italy, June 29 2015

(with prof. Guerino Mazzola) “*Hypergestures in Complex Time: Creative Performance between Symbolic and Physical Reality*,” MCM 2015 **Conference**, Queen Mary University of London, UK, June 24 2015

“*Complex Time in Music: Connecting Symbolic and Physical Reality in Creative Performance*,” University of Palermo, Italy, May 27 2015

“*Complex Time in Music: Connecting Symbolic and Physical Reality in Creative Performance*,” Music and Sound Studies Graduate Student Colloquium, University of Minnesota School of Music, Minneapolis, USA, April 24 2015

“*Physics, Mathematics, Music, Visual Arts: a possible link among different subjects*,” in the project of *Concerts-Laboratories 2012*, Istituto Superiore di Studi Musicali “Arturo Toscanini,” Ribera (AG) Italy, March 6 2012

“*Forms and mathematical functions as a link between the visual arts and music: a hypothesis of partial reversibility*,” May 7 2009, National Congress *National Composition Music Architecture*, Music Conservatory “V. Bellini,” Faculty of Engineering and Faculty of Architecture, Palermo, Italy, May 6-9 2009

Posters

“*Mathematical theory of musical gestures, gestural similarity, and psychology: a first validating experiment*,” in collaboration with T. Collins, D. Hsu, D. Papageorgiou, September 28 2018, WiMIR First Workshop, Télécom Paris Tech, France (Skype participation)

“*CubeHarmonic: A New Interface from A Magnetic 3D Motion Tracking System to Music Performance*,” in collaboration with E. Kitamura, J. Huang, R. Sugawara, and Y. Kitamura, June 2018, Virginia Tech, USA

“*Mathematics, Art, and Cognitive Sciences: some examples of connection*,” *Conference of the International Journal of Arts and Sciences*, University of Catania, Italy, May 29 2017, plus **lecture**

“*Musical Gestures between Scores and Acoustics: A Creative Application to Orchestra*,” Doctoral Research Showcase, April 11, 2017

“*Musical Gestures between Scores and Acoustics: A Creative Application to Orchestra*,” Council of International Graduate Students Research Showcase, November 28, 2016
and Sound Studies Graduate Student Colloquium, University of Minnesota School of Music, Minneapolis, April 24 2015

“The Pianist's Hand, the Conductor's Baton, and Theoretical Physics: The Paradigm of String Theory in Musical Gestures of Performance and Composition”, Interdisciplinary Research Showcase, April 2016

Can the Mathematics transform Music into Images and Images into Music? in the manifestation *Esperienza InSegna 2011*, Polo didattico dell'Università degli Studi di Palermo (Italy), 2011

Review of Scientific Articles

- Invited reviewer for the conference TENOR 2016
- Invited reviewer for the conference MCM 2017; participation in the Scientific Committee
- Invited reviewer for the Journal of Mathematics and Music, 2018

Graphics and Drawings

- **Artwork** at the Mathematical Art Gallery (JMM 2018 San Diego), “Parametric Still Life”
- **Cover** “Theoretical and Practical Pedagogy of Mathematical Music Theory” (editors M. Montiel and F. Gómez)
- **Cover** “Mathematical Music Theory: Algebraic, Geometric, Combinatorial, Topological and Applied Approaches to Understanding Musical Phenomena” (editors M. Montiel and R. W. Peck)
- **Cover** G. Mazzola et al., “Cool Math for Hot Music”
- **Cover** G. Mazzola et al., “All About Music”
- **Cover** M. Mannone, “Dalla Musica all'Immagine, dall'Immagine alla Musica”

Invited research visits

- University of Greenwich, London, UK, October 2018
- Queen Mary University of London, London, UK, October 2018
- Open University, Milton Keynes, UK, October 2018
- Goldsmiths University, London, UK, January 2018
- Tohoku University, Research Institute of Electrical Communication, Sendai, Japan, November 2017
- Tohoku University, Research Institute of Electrical Communication, Sendai, Japan, June 2017
- Northern Kentucky University, Math Department, USA, April 2017

Teaching

Cycle of seminars “SUONI, GESTI, DIAGRAMMI: relazione tra saperi diversi per una musica che è cultura e sapere complesso” (Sounds, Gestures, Diagrams: Relations between different knowledge areas for a music that is complex knowledge) Music Conservatory of Palermo, November 2018 - March 2019 (expected)

“*Nature, Music, Maths, Coding (Composing Sound to Image)*,” 3-hour lesson in “Creative Coding” class (workshop with the students), see **Lectures**, University of Greenwich, October 5 2018

Italian Coaching for Opera singers for “Gianni Schicchi” and “Suor Angelica,” Spring 2017

Substituting teaching Italian Diction Class, University of Minnesota School of Music, April 2017

Substituting teaching Orchestration Class, University of Minnesota School of Music, November 2016

Substituting teaching “How to Write a Scientific Book about Music,” University of Minnesota School of Music, February and March 2016

Substituting teaching “Performance Theory,” University of Minnesota School of Music, February and March 2016

Substituting teaching “Music Informatics,” University of Minnesota School of Music, February and March 2016

Teaching-assistantship as Italian coach for Opera Workshop, Fall 2015 and Spring 2016

Teaching-assistantship as Italian coach for Opera singers in “Le Nozze di Figaro,” University of Minnesota School of Music, Minneapolis, Spring 2015

Substituting teaching “Mathematics for Music Theorists,” University of Minnesota School of Music, September 2015

Teaching-assistantship (TA) at University of Minnesota School of Music, Contemporary Music Workshop, Fall 2014

Private piano class in Paris (as volunteering), also to a child affected by autism (2013-14)

Teaching in the course of *The theory, the listening, the analysis, the history of music* in the project *Sounds, gestures, words of women and men, a bridge in the Mediterranean Sea*, Liceo Classico Statale “G. Meli,” Palermo (Italy), 2011

Composition Teaching-Assistantship, Music Conservatory “Vincenzo Bellini,” Palermo (Italy), 2009-2011

Piano Teaching-Assistantship, Music Conservatory “Vincenzo Bellini,” Palermo (Italy), 2008-2010

Selected Performances of Compositions

Orchestra Sinfonica Siciliana at Teatro Politeama Garibaldi in Palermo (Italy), November 25 2013, composition “*Santa Rosalia*”

Accademia Musicale Chigiana in Siena (Italy), 24 August 2010, film music *Tredici variazioni sul tema*, new score for an existing movie

Festival delle *Orestyadi* di Gibellina (Italy), June 27 2013, composition “*Seule*”

Arts Quartier Festival, University of Minnesota, October 5 2016: Projection of the movie “*Paris, La Ville Pulsante*” (with original music, drawings and photographs)

Selected Experiences as a Musical Performer

Piano playing at the Italian Cultural Center in Minneapolis, during a Consular Event, November 14, 2016 (performance of Italian classic and modern repertory, as well as my original music)

Concert (participation): *Collage Concert* of the School of music of the U of M, October 29, 2016 (piano playing of an original piece)

Concerts (participation): *Music of Today*, Composition recital of students of prof. Alex Lubet, University of Minnesota, Minneapolis, May 2 2015, November 7 2015, April 29 2016, December 5 2016, April 29 2017

Concert (participation), *Contemporary Music Workshop presents: the music of C. Cardew*, University of Minnesota, Minneapolis, December 9 2014

Stages, Courses, Master Classes attended

Stages *Open Music*, IRCAM, Paris (France), Computer assisted composition, 2012-13, Prof. M. Malt, Just. Bresson, G. Lorieux

Stage in the Music Conservatory of Palermo (Italy), mathematical and physical techniques applied to the musical analysis, 2010-2011, Prof. M. Betta

Master Class in Composition, Livorno (Italy), 2011, Prof. Sir P. Maxwell Davies

Master class in **Orchestral Conducting Technique**, Palermo (Italy), 2011, Prof. E. Nicotra

Advanced course in **Film Music Composition**, **Accademia Musicale Chigiana**, Siena (Italy), 2010, Prof. L. Bacalov

Master Classes in Orchestral Conducting, Palermo (Italy); 2009 Prof. L. Marosi, 2010 and G. Yaslicam

Course of Scientific Illustration, Academy of Fine Arts, Palermo (Italy), 2009, Prof. G. Benenati

Seminar "Physics of the Music," Department of Physical and Astronomic Sciences of the University, Palermo (Italy), 2006, Prof. A. Panicola

Languages

French: level C1 (DALF 69/100);

English: current English level C1; SETTA exam (Spoken English for Non Native Speakers): level 1 (highest)

Italian: native speaker;

Latin and Ancient Greek: school knowledge

Other Activities and Hobbies

Volunteering at Hôtel des Invalides in Paris (France), with the Malta Order. Listening, conversation and visits to museums for old people and invalid by war, February-May 2014, Paris, France

Drawing, Flute playing, Theremin playing, Yoga, Rowing