

## Ernesto De Vito

Full Professor in Probability

### EDUCATION AND TRAINING

1991

**Master degree in Physics**

“Gruppi quantistici semisemplici”

University of Genova - Genova - IT

1995

**Ph.D. in Physics**

“Simmetrie generalizzate in sistemi quantistici”

University of Genova - Genova - IT

### PROFESSIONAL HISTORY

1997 - 2007

**Assistant Professor in Analysis**

Università di Modena e Reggio Emilia - Modena - IT

2007 - 2014

**Assistant Professor in Probability**

University of Genova - Genova - IT

2014 - 2017

**Associate Professor in Probability**

Università di Genova - Genova - IT

2017 -

**Full Professor in Probability**

University of Genova - Genova - IT

### ACADEMIC APPOINTMENTS

2008-

**Member of Doctoral College of Mathematics and Applications**

University of Genova - Genova - IT

2011-2015

**Member of Commissione Programmazione del Dipartimento di Matematica**

University of Genova - Genova - IT

2013-2017

**Member of Commissione Ricerca del Dipartimento di Matematica**

University of Genova - Genova - IT

2013-2015

**Member of Board Department of Mathematics**

University of Genova - Genova - IT

2015-2017

**Member of Osservatorio per la Qualità della Ricerca**

University of Genova - Genova - IT

2017-2020

**Member of Presidio per la Qualità**

University of Genova - Genova - IT

2020

**Member of gruppo di esperti di valutazione di Ateneo**

University of Genova - Genova - IT

2020-2023

**Coordinator Gruppo UMI**

Matematica per l'intelligenza artificiale e il Machine Learning

2021-2023

**Member committee ASN 01/A3**

2021-2024

**Member of Board Department of Mathematics**

University of Genova - Genova - IT

2023-

**Member of Board Gruppo UMI**

Matematica per l'intelligenza artificiale e il Machine Learning

2021-

**Vicecoordinator Commissione Didattica di Ateneo**

University of Genova - Genova - IT

2022-

**Course Coordinator of the Department of Mathematics**

University of Genova - Genova - IT

2025-

**Member of Board Scuola di Scienze matematiche, fisiche e naturali**

University of Genova - Genova - IT

## EXPERIENCE

MAIN SEMINARS

PRINCIPALI SEMINARI

2000 Group theoretical quantum tomography

XIII International Congress of Mathematical Physics, London

**2008** Sparse recovery:  $l_1 + l_2$ -minimization algorithm  
XXVIII Congress in Harmonic Analysis, Perugia

**2009** A class of reproducing group  
XXIX Congress in Harmonic Analysis, Bardonecchia

**2009** Spectral methods for learning high dimensional data  
Inverse Problems: Modeling & Simulation, Antalya

**2010** A “mock” metaplectic representation  
XXX Convegno Nazionale di Analisi Armonica, Roma

**2011** Kernel methods for support estimation  
Weierstrass Institute, Berlin

**2012** Reproducing formulas associated with symbols  
Modern Methods of Time-Frequency Analysis II, Wien

**2014** Kernel methods for support estimation  
SIMAI 2014, Taormina

**2015** Kernel methods for support estimation  
Challenges In Optimization For Data Science, Paris

**2017** Reconstruction Trees  
First Italian Meeting on Probability and Mathematical Statistics, Torino

**2019** Supervised learning theory: a mathematical review  
Computational Mathematics, Statistics And Machine Learning, Pavia

**2019** Unitarization and Inversion Formulae for the Radon Transform between Dual Pairs  
XXI Congresso UMI, Analisi armonica, Pavia

**2022** Understanding Neural Networks with Reproducing Kernel Banach Spaces  
“D2 Seminar Series” – Florence Center for Data Science (online)

**2022** Empirical risk minimization: old and new results  
UMI PRISMA - Webinars series” (online)

**2023** Understanding Neural Networks with Reproducing Kernel Banach Spaces  
Stochastic Models for Complex Systems, Lecce

**2023** Understanding Neural Networks with Reproducing Kernel Banach Spaces  
Workshop on Optimal Transport, Mean-Field Models, and Machine Learning, Munich

**2024** Learning Convolution Operators with Kernel Methods  
Online seminar Inverse Problems and Learning Theory (online)

**2025** Learning a bounded operator: misspecified setting  
Variational Methods and Non-Smooth Geometric Structures with Applications, Milano

SCIENTIFIC RESPONSIBILITY FOR RESEARCH PROJECTS ACCEPTED FOR FUNDING ON THE BASIS OF COMPETITIVE CALLS INVOLVING PEER REVIEW

2023 -

Principal Investigator Genova Unite PRIN 2022

Gradient Flows and Non-Smooth Geometric Structures with Applications to Optimization and Machine Learning (PI Giuseppe Savaré)

2024 -

Principal Investigator FAIR

"Harmonic Analysis and Optimization in Infinite-Dimensional Statistical"

PARTICIPATION IN THE CREATION OF NEW BUSINESS ENTITIES (SPIN-OFFS), DEVELOPMENT, USE AND COMMERCIALISATION OF ACADEMIC PATENTS

2020 -

Member Ellis Society

ELLIS - the European Laboratory for Learning and Intelligent Systems - is a pan-European AI network of excellence which focuses on fundamental science, technical innovation and societal impact

## Research Activity

My research primarily focuses on Machine Learning. I am part of the MaLGa research group. My research interests include:

- kernel methods
- statistical inverse problems
- Reproducing kernel Hilbert/Banach spaces

In the past, I have also worked on the probabilistic structure of quantum mechanics, particularly on the problem of quantum symmetries. More recently, I have studied harmonic analysis, investigating multi-scale representations associated with reproducing groups, frames in functional spaces, and the Radon transform.

I am the author of over 80 publications in peer-reviewed international journals, conference proceedings, and book chapters. I am also a co-author of a book. A complete list of publications is available on my [website](#).

## Teaching Activity

My teaching activity includes courses in Probability, Statistics, and Mathematical Analysis. I have supervised numerous undergraduate and master's theses, as well as several PhD students. Additionally, I co-organized four summer schools on applied harmonic analysis and machine learning.