

Camillo Cammarota

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Personal information

Date of Birth: 1953
Place of Birth: Naples, Italy
Citizenship: Italian

Education

Degree in Physics Cum Laude, University of Naples, 1976
Scholarship in Mathematical Physics at the University of Rome C.N.R. grant 1976-1981
Military service: 9/1977 - 2/1979

Employment

La Sapienza University of Rome, Department of Mathematics

Research Assistant in Mathematical Physics 1981-1993
Associate Professor in Mathematical Physics 1993-Present

Teaching

Analysis of data sequences (from 2015/16 to present)
Calculus and Biostatistics; Biometry
Master in Scientific Calculus (Mathematical models of time series)
Mechanics

Research

Time series

Stochastic stationary models: symbolic dynamic; spectral analysis; non parametric test of serial independence; time reversibility, Inter-event times statistic.
Non stationary models: trend extraction; wavelet analysis; feature extraction for functional data; anomaly detection.

Applications to cardiology

Heart rate variability in normal and pathological conditions: atrial fibrillation, heart transplant, stress, hypertension, dialysis, ischemia.

Detection and analysis of electrocardiogram during the exercise test.

Applications to climate and weather data

Wind speed and sea surface temperature data series

Nonlinear predictive models in multivariate datasets

Trees and random forests. Variables selection and importance.

Applications to prediction of body composition from multi-frequency bio impedance data

Probabilistic methods in forensic science, psychometry

Evaluation of the likelihood ratio related to the crime scene evidence and the suspect characteristic.
Statistical analysis of psychometric data.

Statistical Mechanics and Percolation

Cluster expansion for multicomponent interaction in spin systems

Renormalized Hamiltonian

Correlation inequalities and group structure

Monotonicity in temperature for random clusters in interacting spin systems.

Academic activities

Academic Director of Master in *Scientific Calculus* 2013 - 2018

Member of CISB - Interdepartmental Research Centre for Models and Information Analysis in Biomedical Systems, University "La Sapienza" 1999-2010

Referee for: *Journal of Applied Statistics*, *Journal of the Royal Society Interface*, *Chaos, Solitons & Fractals*, *IEEE Transactions on Signal Processing*

Chairman of State Examination Commission for High School (1998-2000)

Commission of selection to positions of Associate Professor in Mathematical Physics (D.M. 05/29/97)

Experts on Industrial Research of the Ministry of Education and Research (D.M. 02/02/12)

External collaborations

Thales Alenia Space - Scientific head of three research contracts: Study and implementation of data analytics functions for satellite telemetry data, 2019 - 2020 - 2021

CNR-ISMAR - Joint doctoral programme 2019 - 2022

DMTECH S.R.L. - Collaborator on the project: Software for the management and automatic processing of film assets (CIAK), 2018-2020

Cardiology Laboratory of Clinical Department University La Sapienza Rome (1996-2017)

Italian Carabinieri - Reparto Investigazioni Scientifiche (RIS) (2004-2006)

Cardiology Laboratory of Legal Medical Institute Aeronautica Militare (2002-2003)

Menarini - Pomezia: Lectures on Biometry for the technical staff (November 2010 - January 2011)

Recent publications

- Mocini, E., Cammarota, C., Frigerio, F., Muzzioli, L., Piciocchi, C., Lacalaprice, D., Buccolini, F., Donini, L.M., Pinto, A., Digital Anthropometry: A Systematic Review on Precision, Reliability and Accuracy of Most Popular Existing Technologies. *Nutrients*, 2023; 15(2):302. <https://doi.org/10.3390/nu15020302>.
- Leonelli, F. E., Bellacicco, M. , Pitarch, J. , Organelli, E. , Nardelli B, Buongiorno , de Toma, V. , Cammarota, C. , Marullo, Santoleri, R., Ultra-oligotrophic waters expansion in the North Atlantic Subtropical Gyre revealed by 21 years of satellite observations, 2022, *Geophysical Research Letters*, <https://doi.org/10.1029/2021GL096965>.
- Cammarota, C., Inter-event times statistic in stationary processes: non linear arma modeling of wind speed time series, *Nonlinear Phenomena in Complex Systems*, 2021, 24, 4, 370-381. <https://doi.org/10.33581/1561-4085-2021-24-4-370-381>.
- Cammarota, C., Pinto, A., Variable selection and importance in presence of high collinearity: an application to the prediction of lean body mass from multi-frequency bioelectrical impedance, *Journal of Applied Statistics* , 2020, <https://doi.org/10.1080/02664763.2020.1763930>.
- C. Cammarota, M. Curione, Trend Extraction in Functional Data of Amplitudes of R and T Waves in Exercise Electrocardiogram *Fluctuation and Noise Letters*, 2017, <https://doi.org/10.1142/S0219477517500146>.
- Cammarota, C. Estimating the turning point location in shifted exponential model of time series, *Journal of Applied Statistics*, 2016, 44:7, 1269-1281, <https://doi.org/10.1080/02664763.2016.1201797>.
- Iliceto, P., Fino, E., Cammarota, C., Giovani, E., Petrucci, F., Desimoni, M., Sabatello, U., Candilera, G., Oei, T.P. (2013). Factor structure and psychometric properties of the Italian version of the Gambling Relations Cognitions Scale (GRCS-I), *Journal of Gambling Studies*, 2013, <https://doi.org/10.1007/s10899-013-9405-6>.
- M. Curione, C. Castro, C. Cammarota, G. Tonnarini, M. Pasquali, Progressive loss in circulating volume during haemodialysis can be monitored by time voltage integral area of QRS complex: pilot study *Archives of Medical Science*, 2013, 9, 544-547, <https://doi.org/10.5114/aoms.2013.34443>.
- C. Cammarota, M. Curione, Time delay between RR and RT heart beat intervals assessed by trend extraction of exercise test data *Fluctuation and Noise Letters* , 2012, 11, 1250019, 1-18, <https://doi.org/10.1142/S0219477512500198>.
- C. Cammarota, M. Curione, Modeling trend and time-varying variance of heart beat RR intervals during stress test *Fluctuation and Noise Letters*, 2011, 10, 169-180, <https://doi.org/10.1142/S0219477511000478>.
- C. Cammarota, The difference-sign runs length distribution in testing for serial independence. *Journal of Applied Statistics*, 2011, 38, 1033-1043, <https://doi.org/10.1080/02664761003758984>.

Recent conference contributions

- Ciancarelli, C., Intelisano, A., Nicito, A., Cammarota, C., Barrasso, S.G., Corallo, F., Russo, F., Spacecraft telemetries analysis for anomaly detection functions, 2021, *Proceedings of the 2021 conference on Big Data from Space*, <https://doi.org/10.2760/125905>, 85-88.
- Fattorini, L. , Summa, A., Marchetti, E., Corradi, S. , Di Fazio, J., Fantini, C., Donini, L. M., Cammarota, C., Pinto, A., Body density estimation from multi-frequency Bioelectrical Impedance Analysis measurements, *Conference Abstracts of SINU 2018*, 2019, 29,8, 884-885, <https://doi.org/10.1016/j.numecd.2019.05.049>.
- Pinto, A., Fattorini, L., Donini, L. M., Pollakova, D., Rizzo, M., and Gnessi, L., Lenzi, A., Cammarota, C., Application of recursive partitioning method (RPM) to select the multi-frequency bioimpedance analysis (MF-BIA) raw parameters predicting appendicular skeletal muscle mass index (SMI), *Conference Abstracts of SINU 2018*, 2019, 29, 8, <https://doi.org/10.1016/j.numecd.2019.05.024>.
- Cammarota, C., Curione, M., Quaresima, A., Varrenti, M., Time delay between RR and RT heart beat

intervals in exercise test of normal subjects and elderly ischemic patients, *Cardiovascular Oscillations (ESGCO)*, 2014, 8th Conference of the European Study Group, <https://doi.org/10.1109/esgco.2014.6847558>, 139–140.

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