

# Alessia CAPONERA

## PERSONAL DATA

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## ACADEMIC POSITIONS

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FEBRUARY 2023 – PRESENT	Assistant Professor (Ricercatore SECS-S/01, Legge 240/10 tipo A) <b>University of Milano-Bicocca</b> At the Department of Economics, Management and Statistics (DEMS)
OCTOBER 2020 – JANUARY 2023	Postdoctoral Associate <b>École Polytechnique Fédérale de Lausanne</b> In the research team of Prof. Victor Panaretos
DECEMBER 2019 – SEPTEMBER 2020	Research Associate <b>University of Rome Tor Vergata</b> In the research team of Prof. Domenico Marinucci

## EDUCATION

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NOVEMBER 2016 – FEBRUARY 2020	Ph.D. in <i>Methodological Statistics</i> <b>Sapienza University of Rome</b> Thesis: <i>Statistical inference for spherical functional autoregressions</i> Under the joint supervision of Prof. Pierpaolo Brutti and Prof. Domenico Marinucci
AY 2015 – 2016	Master <i>Mathématiques, Informatique, Décision et Organisation</i> <b>Paris Dauphine University</b> Thesis: <i>Evidence estimation of state space models: Sequential Monte Carlo<sup>2</sup> and Chib's method</i> Advisor: Prof. Christian P. Robert
OCTOBER 2014 – OCTOBER 2016	Master of Science in <i>Statistics and Decisions</i> (double degree) <b>Sapienza University of Rome</b> 110 cum laude/110 Thesis: <i>Adaptive smoothing spline with application to seismic data</i> Advisor: Prof. Pierpaolo Brutti
OCTOBER 2011 – JULY 2014	Bachelor's Degree in <i>Statistics, Economics and Society</i> <b>Sapienza University of Rome</b> 110 cum laude/110 Thesis: <i>Distribuzione di Dirichlet e applicazioni</i> Advisor: Prof. Luca Tardella
2006 – 2011	High School Diploma <b>Liceo Scientifico B. Croce di Roma</b>

## ACADEMIC AWARDS

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- :: IMS New Researcher Travel Award to attend the 2022 IMS Annual Meeting (800USD)
- :: ISBA Travel Award to attend the 2018 ISBA World Meeting (250USD)

## SERVICE TO PROFESSION

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### POSITIONS IN ACADEMIC SOCIETIES

- :: Member of the editorial board of YoungStatS, blog of Young Statisticians Europe - FENStatS (since November 2022)
- :: Elected member of the board of Young SIS - Italian Statistical Society (2019 – 2021)
- :: Member of the Italian Statistical Society, Institute of Mathematical Statistics, Bernoulli Society

### ORGANIZATION OF SCIENTIFIC EVENTS

- :: Member of the scientific committee of EcoSta 2023 and organizer of the session *To stationarity and beyond: statistical inference for nonstationary data structures*
- :: Organizer of the One World YoungStatS Webinar on Recent Advances in Extreme Value Theory
- :: Organizer of the session *Probabilistic and statistical properties of sphere-cross-time random fields* at Third Italian Meeting on Probability and Mathematical Statistics
- :: Organizer of the session *On the second-order dynamics of intricate functional data* at EcoSta 2022
- :: Member of the scientific committee of 50th Scientific Meeting of the Italian Statistical Society (SIS 2020)
- :: Organizer of the y-SIS session *y-SIS: From methodology to applications* at CFE-CMStatistics 2019

### REFeree SERVICE

Electronic Journal of Statistics, Bernoulli, Computational Statistics and Data Analysis, Bayesian Analysis, Environments

### SERVICE TO UNIVERSITY

External supervisor of Master's thesis in *Mathematics*, **University of Rome Tor Vergata**

Student: Ludovica Pofi (2022)

External supervisor of Master's thesis in *Data Science*, **Sapienza University of Rome**

Student: Federica Spoto (2020)

## REFEREED JOURNALS

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Caponera, A., Fageot, J., Simeoni, M., Panaretos, V.M. (2022) *Functional estimation of anisotropic covariance and autocovariance operators on the sphere*. Electronic Journal of Statistics, vol. 16, no. 2, pp. 5080-5148.

Caponera, A., Panaretos, V.M. (2022) *On the rate of convergence for the autocorrelation operator in functional autoregression*. Statistics & Probability Letters, vol. 189, p. 109575.

Caponera, A., Durastanti, C. (2022) *Parametric estimation for functional autoregressive processes on the sphere*. Theory of Probability and Mathematical Statistics, vol. 106, pp. 63-83.

Caponera, A. (2021) *SPHARMA approximations for stationary time series on the sphere*. Statistical Inference for Stochastic Processes, vol. 24, pp. 609-634.

Caponera, A., Durastanti, C., Vidotto, A. (2021) *LASSO estimation for spherical autoregressive processes*. Stochastic Processes and their Applications, vol. 137, pp. 167-199.

Caponera A., Marinucci D. (2021) *Asymptotics for spherical functional autoregressions*. Annals of Statistics, vol. 49, no. 1, pp. 346-369.

## MANUSCRIPTS UNDER REVIEW AND IN PREPARATION

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Caponera, A. (2022+) *Asymptotics for spherically indexed functional data*. Manuscript submitted for publication. arXiv: 2212.02329

Caponera, A., Marinucci, D., Vidotto, A. (2023+) *Multiscale CUSUM tests for time-dependent spherical random fields*. Manuscript submitted for publication. arXiv:2305.01392

## CONFERENCE PROCEEDINGS AND BOOK CHAPTERS

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Spoto, F., Caponera, A., Brutti, P. (2022) *Universal change point testing for dependent data*. In: Book of Short Papers SIS 2022. ISBN 9788891932310

Spoto, F., Caponera, A., Brutti, P. (2021) *Spherical autoregressive change-point detection with applications*. In: Book of Short Papers SIS 2021. ISBN: 9788891927361

Caponera, A., Denti, F., Rigon, T., Sottosanti, A., Gelfand, A. (2018) *Hierarchical spatio-temporal modeling of resting state fMRI data*. In: Studies in Neural Data Science (Canale, A., Durante, D., Paci, L., Scarpa, B., editors).

Caponera, A., Werner, M. J. (2018) *How robust is the skill score of probabilistic earthquake forecasts?*. In: Book of Short Papers SIS 2018. ISBN: 9788891910233

## PRESENTATIONS

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### INVITED SEMINARS

- 2023 Department of Statistical Sciences, **Sapienza University of Rome**
- 2022 StatScale Seminar Series, **University of Cambridge** and **University of Lancaster** (online)
- 2022 Research Center for Statistics, **University of Geneva**
- 2022 Department of Mathematics, **University of Rome Tor Vergata**
- 2021 Department of Mathematics and Statistics, **Maynooth University** (online)
- 2020 School of Computer Science & Statistics, **Trinity College Dublin**
- 2019 Department of Mathematics, **University of Rome Tor Vergata**

### INVITED TALKS

- 2022 International Symposium of Nonparametric Statistics, Paphos, Cyprus
- 2022 Third Italian Meeting on Probability and Mathematical Statistics, Bologna, Italy
- 2022 39th Spanish Conference on Statistics and OR (SEIO 2022), Granada, Spain
- 2021 CFE-CMStatistics, London, UK (online)
- 2021 One World YoungStatS Webinar on Recent Advances in Functional Data Analysis, with discussant (online)
- 2019 Second Italian Meeting on Probability and Mathematical Statistics, Vietri sul Mare (SA), Italy
- 2019 StaTalk@UniBO, Bologna, Italy

### CONTRIBUTED TALKS

- 2022 IMS Annual Meeting, London, UK
- 2019 CFE-CMStatistics, London, UK
- 2019 11th International Workshop on Statistical Seismology, Hakone, Japan
- 2019 European Meeting of Statisticians, Palermo, Italy
- 2019 3rd Warsaw Summer School in Probability, Warsaw, Poland
- 2018 49th Scientific Meeting of the Italian Statistical Society (SIS 2018), Palermo, Italy
- 2017 CFE-CMStatistics, London, UK

### POSTERS

- 2018 ISBA World Meeting, Edinburgh, Scotland
- 2017 SISBAYES, Rome, Italy

## TEACHING EXPERIENCE

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- AY 2022 – 2023 Lecturer for the following courses:  
SPRING *Statistical Inference I* (15h)  
PhD in *Statistics*, **University of Milano-Bicocca**  
SPRING *Metodi Statistici per il Marketing* (63h)  
M.Sc. in *Marketing and Global Markets*, **University of Milano-Bicocca**
- AY 2022 – 2023 TA for the course  
FALL *Linear Models* (Prof. Victor Panaretos)  
Bachelor in *Mathematics*, Masters in *Data Science and Digital Humanities*, **EPFL**
- AY 2021 – 2022 TA for the course  
FALL *Linear Models* (Prof. Victor Panaretos)  
Bachelor in *Mathematics*, Masters in *Data Science and Digital Humanities*, **EPFL**
- AY 2020 – 2021 TA for the course  
FALL *Probabilités et Statistique* (Prof. Matthieu Wilhelm)  
Bachelors in *Mechanical and Electrical Engineering*, **EPFL**
- AY 2019 – 2020 Lecturer for the following courses:  
SPRING *Probabilità e Statistica* (30h/60h) shared with Dr. Francesco Iafrate (30h/60h)  
SPRING *Laboratorio di Statistica* (30h)  
Bachelor in *Mechanical Engineering*, **Sapienza University of Rome**  
SPRING *Hacking day on Statistical Inference for Spherical Functional Autoregressions* (2h, specialist lecture)  
M.Sc. in *Mathematics for Data Science*, **University of Trento**
- AY 2018 – 2019 TA for the following courses:  
FALL *Statistica di Base* (Prof. Valeria Sambucini)  
Bachelor in *Statistics*, **Sapienza University of Rome**  
FALL *Statistical Methods in Data Science and Laboratory* (Prof. Pierpaolo Brutti)  
M.Sc. in *Data Science*, **Sapienza University of Rome**
- AY 2017 – 2018 TA for the following courses:  
FALL *Statistica di Base* (Prof. Valeria Sambucini)  
Bachelor in *Statistics*, **Sapienza University of Rome**  
FALL *Laboratory of Statistical Decisions* (Prof. Fulvio De Santis)  
M.Sc. in *Statistics and Decisions*, **Sapienza University of Rome**  
SPRING *Inferenza Statistica* (Prof. Luca Tardella)  
Bachelor in *Statistics*, **Sapienza University of Rome**
- AY 2016 – 2017 TA for the course  
SPRING *Inferenza Statistica* (Prof. Luca Tardella)  
Bachelor in *Statistics*, **Sapienza University of Rome**
- 2016 – 2019 Collaboration within the project “[Piano Lauree Scientifiche](#)”  
Department of Statistical Sciences, **Sapienza University of Rome**  
Main activities:  
– Tutoring service and remedial courses  
– *Alternanza Scuola Lavoro* for **Liceo Scientifico Plinio Seniore di Roma** (2016/17, 2017/18)  
– *Verso l'Esame di Stato: Statistica e Probabilità* (2018/19)  
– *Convegno sui Licei Matematici* (2018/19)

## SCHOLARSHIPS AND FUNDING

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- 2019 Sapienza University funding “Progetti di Ricerca (Piccoli, Medi) - Progetti Medi”  
*Trattamento dell'incertezza: identificabilità, campi aleatori* (PI: Prof. Barbara Vantaggi)
- 2018 Sapienza University funding “Progetti per Avvio alla Ricerca”  
*Space-time spherical random fields and their applications to Astrostatistics*
- 2017 *Estimating and forecasting earthquakes by adaptive smoothing splines*
- 2017 LML Summer School 2017 scholarship  
**London Mathematical Laboratory**
- 2015 Erasmus+ scholarship  
**Paris Dauphine University**

## LANGUAGES

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ITALIAN: Mother tongue  
ENGLISH: C1  
FRENCH: A2

## COMPUTER SKILLS

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OPERATING SYSTEMS: macOS, Windows  
LANGUAGES AND SOFTWARE: R, Python, Matlab,  $\text{\LaTeX}$ , Microsoft Office