

# Alessia CAPONERA

## PERSONAL DATA

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PLACE AND DATE OF BIRTH: Rome | December 5th, 1992  
EMAIL: [alessia.caponera92@gmail.com](mailto:alessia.caponera92@gmail.com)

## ACADEMIC POSITIONS

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OCTOBER 2020 – PRESENT	Postdoctoral Researcher <b>École Polytechnique Fédérale de Lausanne</b> In the research team of Prof. Victor Panaretos
DECEMBER 2019 – SEPTEMBER 2020	Postdoctoral Researcher <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
2006 – 2011	High School Diploma <b>Liceo Scientifico B. Croce di Roma</b>

## SERVICE TO PROFESSION

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Elected member of the board (2018 – 2020) of the young group (y-SIS) of the Italian Statistical Society  
Scientific committee of 50th Scientific Meeting of the Italian Statistical Society (SIS2020)  
Referee service for Electronic Journal of Statistics and Bernoulli

## SERVICE TO UNIVERSITY

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External supervisor of Master's student Federica Spoto (2020)  
**M.Sc. in Data Science, Sapienza University of Rome**

## TEACHING EXPERIENCE

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- AY 2020 – 2021 Teaching assistant for the course  
FALL *Probabilités et statistique* (Prof. Matthieu Wilhelm)  
**Bachelors in Mechanical and Electrical Engineering, École Polytechnique Fédérale de Lausanne**
- 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 Teaching assistant 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 Teaching assistant 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 Teaching assistant 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)

## REFEREED JOURNALS

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- Caponera A., Marinucci D. (2021) *Asymptotics for spherical functional autoregressions*. *Annals of Statistics*, vol. 49, no. 1, pp. 346-369.
- Caponera, A., Durastanti, C., Vidotto, A. (2021+) *LASSO estimation for spherical autoregressive processes*. *Stochastic Processes and their Applications*. In press. arXiv:1911.11470

## MANUSCRIPTS UNDER REVIEW AND IN PREPARATION

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- Caponera, A. (2020) *SPHARMA approximations for stationary time series on the sphere*. arXiv preprint. Submitted for publication. arXiv:2009.13189
- Spoto, F., Caponera, A., Brutti, P. *Spherical autoregressive change-point detection with applications*. Preprint.

## CONFERENCE PROCEEDINGS AND BOOK CHAPTERS

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Caponera, A. (2019) *Asymptotics and regularization in spherical functional autoregressive models*. In: CFE-CMStatistics 2019 Book of Abstracts. ISBN:978-9963-2227-8-0

Caponera A. (2019) *Stein-Malliavin techniques for spherical functional autoregressions*. In: Book of Abstracts. Second Italian Meeting on Probability and Mathematical Statistics. ISBN: 979-12-200-4788-3

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

Caponera, A., Werner, M. J. (2017) *Understanding variability of models' time-averaged predictive skill in earthquake forecasting*. In: CFE-CMStatistics 2017 Book of Abstracts. ISBN: 978-9963-2227-4-2

## SCHOLARSHIPS AND FUNDING

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AY 2019 – 2020	Sapienza University funding “Progetti di Ricerca (Piccoli, Medi) - Progetti Medi” <i>Trattamento dell’incertezza: identificabilità, campi aleatori</i> (PI: Prof. Barbara Vantaggi)
AY 2018 – 2019	Sapienza University funding “Progetti per Avvio alla Ricerca” <i>Space-Time Spherical Random Fields and their Applications to Astrostatistics</i>
AY 2017 – 2018	<i>Estimating and Forecasting Earthquakes by Adaptive Smoothing Splines</i>
JUNE 2018	ISBA travel support for ISBA 2018 World Meeting <b>University of Edinburgh</b>
AUGUST 2017	LML Summer School 2017 scholarship <b>London Mathematical Laboratory</b>
AY 2015 – 2016	Erasmus+ scholarship <b>Paris Dauphine University</b>

## LANGUAGES

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ITALIAN: Mother tongue  
ENGLISH: B2  
FRENCH: A2

## COMPUTER SKILLS

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

## CONFERENCES AND SEMINARS

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- JANUARY 2020  
SEMINAR *Asymptotics and regularization in spherical functional autoregressive models*  
held at the **School of Computer Science & Statistics, Trinity College Dublin**
- DECEMBER 2019  
SESSION *y-SIS: From methodology to applications*  
organized and chaired at CFE-CMStatistics 2019  
**University of London**
- DECEMBER 2019  
TALK *Asymptotics and regularization in spherical functional autoregressive models*  
presented at CFE-CMStatistics 2019  
**University of London**
- AUGUST 2019  
TALK *Fluctuations of the information gain as skill score of probabilistic earthquake forecasts*  
presented at 11th International Workshop on Statistical Seismology  
Hakone, Japan
- JULY 2019  
TALK *Asymptotics for spherical functional autoregressions*  
presented at European Meeting of Statisticians 2019  
**University of Palermo**
- JUNE 2019  
INVITED TALK *Stein-Malliavin techniques for spherical functional autoregressions*  
presented at Second Italian Meeting on Probability and Mathematical Statistics  
Vietri sul Mare (SA), Italy  
TALK presented at 3rd Warsaw Summer School in Probability  
**University of Warsaw**
- MAY 2019  
SEMINAR *Asymptotics for spherical functional autoregressions*  
held at the **Department of Mathematics, University of Rome Tor Vergata**
- MARCH 2019  
TALK *Asymptotics for spherical functional autoregressions*  
presented at StaTalk @ UniBO  
**University of Bologna**
- JUNE 2018  
POSTER *Hierarchical spatio-temporal modeling of resting state fMRI data*  
presented at ISBA 2018 World Meeting  
**University of Edinburgh**
- JUNE 2018  
TALK *How robust is the skill score of probabilistic earthquake forecasts?*  
presented at 49th Scientific Meeting of the Italian Statistical Society (SIS2018)  
**University of Palermo**
- DECEMBER 2017  
TALK *Understanding variability of models' time-averaged predictive skill in earthquake forecasting*  
presented at CFE-CMStatistics 2017  
**University of London**
- FEBRUARY 2017  
POSTER *Adaptive smoothing spline with application to seismic data*  
presented at SISBAYES 2017 meeting  
**Sapienza University of Rome**

Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del D.P.R. 445/2000.

Autorizzo la pubblicazione ai sensi del D.Lgs. n. 33/2013 "Riordino della disciplina riguardante gli obblighi di pubblicità, trasparenza e diffusione di informazioni da parte delle pubbliche amministrazioni" e acconsento all'utilizzo delle informazioni ivi contenute ai sensi del D.L. n. 196/2003 "Codice in materia di protezione dei dati personali".