Kwo Lik Lax Chan

Assistant Professor (RTT) in Statistics

Last updated: July 2026

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RESEARCH INTERESTS:

Functional data analysis | Limit theorems of U-statistics | Multiple systems estimation

PRESENT ACADEMIC APPOINTMENTS

05/2025–Present **Assistant professor (RTT) in Statistics**
DiSEI, Università del Piemonte Orientale "A. Avogadro", Novara, Italy

05/2025–Present **Honorary assistant professor in Statistics**
School of Mathematics, University of Birmingham, United Kingdom

PAST ACADEMIC APPOINTMENTS

07/2024–05/2025 **Assistant professor in Statistics**
School of Mathematics, University of Birmingham, United Kingdom

02/2022–06/2024 **Assistant professor (RTD-A) in Statistics**
DiSEI, Università del Piemonte Orientale "A. Avogadro", Novara, Italy
Scientific advisers: Prof. Enea Bongiorno, Professor Aldo Goia

09/2020–01/2022 **Postdoctoral associate**
DiSEI, Università del Piemonte Orientale "A. Avogadro", Novara, Italy
Scientific advisers: Prof. Enea Bongiorno, Professor Aldo Goia

09/2019–03/2020 **Research Associate**
Knowledge Media Institute, The Open University, Milton Keynes, United Kingdom
Scientific adviser: Dr. Danica Greetham

08/2018–07/2019 **Research fellow**
Rights lab at the University of Nottingham, United Kingdom
Scientific adviser: Sir Bernard W. Silverman, Fellow of the Royal Society

08/2017-08/2018 **Research assistant**
Horizon Institute at the University of Nottingham, United Kingdom
Scientific advisers: Dr. Iker Perez, Dr. Mercedes Torres Torres

EDUCATION

2014–2018 **Doctor of Philosophy in Mathematics**
The Open University, Milton Keynes, United Kingdom
Thesis title: *Continuous spectra for substitution-based sequences.*
Advisors: Prof. Uwe Grimm and Prof. Ian Short

2013–2014 **Master of Science in Mathematics**
The University of Liverpool, United Kingdom

2010-2013 **Bachelor of Science in Mathematics with Honours**
The University of Liverpool, United Kingdom

GRANTS AND AWARDS

2026 **Travel and daily allowance to attend HiTEc summer course** – Grant awarded by COST action

2022-2025 **FSE REACT-EU, PON Ricerca e Innovazione 2014-2020** – Grant funded by European Union

2020-2022 **Project title: Small-ball probabilities in Functional Statistics: theoretical aspects and applications to economic and financial data** – Competitive grant funded by Fondazione CRT

2016 **Young scientist award to attend International conference on Quasicrystals**

2016 **Partial funding to attend thematic month at Oléron, France**

2014-2017 **Fully funded PhD studentship with stipend**

2013-2014 **Liverpool affinity award**

2013-2014 **Faculty of physical sciences and engineering postgraduate scholarship**

2013-2014 **Departmental scholarship for M.Sc. students 2013-2014**

2010-2013 **University of Liverpool regional award**

PUBLICATIONS IN REVIEWED JOURNALS

2026 Lax Chan, Laurent Delsol and Aldo Goia. *A link function specification test in the Single Functional Index Model.* **Advances in Data Analysis and Classification**, 20, 323–365

2026 Enea. G. Bongiorno, Lax Chan and Aldo Goia. *Decomposing Complexity Mixture Processes on Metric Spaces.* **Journal of Statistical Computation and Simulation** , 96 (2), 446–470

2024 Bernard W. Silverman, Lax Chan and Kyle Vincent. *Bootstrapping multiple systems estimates to account for model selection.* **Statistics and Computing** , 34 (44)

2024 Enea G. Bongiorno, Lax Chan and Aldo Goia. *Detecting the Complexity of a Functional Time Series.* **Journal of Nonparametric Statistics**, 36(3), 600–622

2021 Lax Chan, Bernard W. Silverman and Kyle Vincent. *Multiple Systems Estimation for Sparse Capture Data: Inferential Challenges when there are Non-Overlapping Lists.* **Journal of the American Statistical Association (Theory and methods)**, 116 (535), 1297–1306

2020 Ian Dryden, James Goulding, Simon Preston and Lax Chan. *Discussion of Multiple Systems Analysis for the quantification of Modern Slavery: Classical and Bayesian approaches by Silverman.* **Journal of the Royal Statistical Society Series A**, 183

2018 Lax Chan, Uwe Grimm and Ian Short. *Substitution-based structures with absolutely continuous spectrum.* **Indagationaes Mathematicae** , 29(4), 1072–1086

2017 Lax Chan and Uwe Grimm. *Spectrum of a Rudin–Shapiro-like sequence.* **Advances in Applied Mathematics**, 87, 16–23

2014 Kwo Chan[1] and Radhakrishnan Nair. *Problems in strong uniform distribution.* **Tatra Mt. Math. Publ.**, 59, 51–64

[1]This was my registered name when I was at the University of Liverpool.

2014 Kwo Chan and Radhakrishnan Nair. *A remark on the distribution of Chebyshev polynomials on* $[-1, 1]$. **Uniform Distribution Theory**, 9(2), 125–134

REFEREED BOOK CHAPTERS AND CONFERENCE PROCEEDINGS

2026 Lax Chan and Aldo Goia. *Nonparametric Ordinal Regression with a Functional Covariate.* **Statistical Science: From Theory to Applied Research III. SIS-FENStatS 2026. Italian Statistical Society Series on Advances in Statistics. Springer, Cham.**, 433–438

2026 Lax Chan, Laurent Delsol, Aldo Goia. *Weighted Pseudo-Metrics for Finite-Sample Improvement in Functional Nonparametric Regression.* **Statistical Science: From Theory to Applied Research II. SIS-FENStatS 2026. Italian Statistical Society Series on Advances in Statistics. Springer, Cham.**, 573–577

2026 Enea G. Bongiorno, Lax Chan, Aldo Goia. *Statistical Use of the Small Ball Probability.* **Statistical Science: From Theory to Applied Research II. SIS-FENStatS 2026. Italian Statistical Society Series on Advances in Statistics. Springer, Cham.**, 331–336

2025 Lax Chan and Aldo Goia. *Testing linearity in the single functional index model for dependent data.* **Statistical Models and Learning Methods for Complex Data. CLADAG 2023. Studies in Classification, Data Analysis, and Knowledge Organization. Springer, Cham.**, 45–53

2025 Lax Chan, Laurent Delsol and Aldo Goia. *Improving Finite Samples Performances in Nonparametric Functional Regression by Using Weighted Pseudo-Metrics.* **In: Aneiros, G., Bongiorno, E.G., Goia, A., Hušková, M. (eds) New Trends in Functional Statistics and Related Fields. IWFOS 2025. Contributions to Statistics. Springer, Cham.** , 127–134

2025 Enea G. Bongiorno, Lax Chan, Aldo Goia. *Analysing the Complexity Mixture Structure of Daily Probability Densities of Bitcoin Returns.* **In: Aneiros, G., Bongiorno, E.G., Goia, A., Hušková, M. (eds) New Trends in Functional Statistics and Related Fields. IWFOS 2025. Contributions to Statistics. Springer, Cham.** , 61–68

2025 Lax Chan and Bernard W. Silverman. *A bootstrap approach to account for model selection in Multiple Systems Estimation.* **Book of Methodological and Applied Statistics and Demography IV, Volume of the Italian Statistical Society Series on Advances in Statistics series**, 218–222

2025 Enea G. Bongiorno, Lax Chan, Aldo Goia. *Studying a Mixture of Functional Data Having Different Complexity.* **Book of Methodological and Applied Statistics and Demography III, Volume of the Italian Statistical Society Series on Advances in Statistics series**, 243–247

2025 Enea G. Bongiorno, Lax Chan, Aldo Goia. *Confidence Interval for the Complexity Index of Functional Data.* **Book of Methodological and Applied Statistics and Demography III, Volume of the Italian Statistical Society Series on Advances in Statistics series**, 239–242

2023 Lax Chan, Aldo Goia. *Goodness-of-fit test for the Single Functional Index Model.* **Book of Short Papers - CLADAG 2023**

2017 Lax Chan, Uwe Grimm. *Substitution-based sequences with absolutely continuous diffraction.* **Journal of Physics: conference series** (809) 012027

TECHNICAL REPORT AND THESIS

2018 Iker Perez, Lax Chan, Mercedes Torres Torres, James Goulding, Theodore Kypraios. *On Bayesian inferential tasks with infinite-state jump processes: efficient data augmentation.* **arXiv: 1806.02458**

2018 Lax Chan. *Continuous spectra for substitution-based sequences* . **PhD thesis**, Supervisors: Prof. Uwe Grimm and Prof. Ian Short

R PACKAGES

Lax Chan (maintainer and creator), Bernard W. Silverman, Kyle Vincent. *SparseMSE 2.0.1.* https://CRAN.R-project.org/package=SparseMSE

INVITED TALKS AND SEMINARS

25-28/08/2026 **Invited talk at the 27th International Conference on Computational Statistics, Athens, Greece**
Talk title: Enhancing performance in functional nonparametric regression and classification using weighted pseudo-metrics

13-15/12/2025 **Invited talk at the 19th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), online**
Talk title: Finite-sample improvements in nonparametric functional regression through weighted pseudo-metrics

07/09/2023 **Data Science and Computational Statistics Seminar, University of Birmingham, UK**
Talk title: A link function specification test in semi-parametric regression

22-25/08/2023 **Invited talk at the 25th International Conference on Computational Statistics, London**
Talk title: On specifying a link function of a single functional index model

04/07/2023 **Seminari di Matematica e Statistica, Università del Piemonte Orientale, Italy**
Talk title: Goodness-of-fit test for the Single Functional Index Model

17-19/12/2022 **Invited talk at the 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), London**
Talk title: A specification test for the single functional index model

20-24/06/2022 **Invited talk at the International Symposium of Nonparametric Statistics, Pathos, Cyprus**
Talk title: On the complexity index of a functional time series

18-20/12/2021 **Invited talk at the 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), online**
Talk title: Evaluating the complexity of a Functional Time Series

29/03/2017 **Invited talk at Open Statistical Physics, Milton Keynes, UK**
Talk title: Substitution-based structures with absolutely continuous spectrum

07/06/2016 **Plenary talk, Transversal aspects of tilings at Oléron, France**
Talk title: Diffraction spectrum of a Rudin–Shapiro-like sequence

CONTRIBUTED TALKS AND POSTER PRESENTATIONS

25-27/06/2026 **Contributed talk at the Joint Meeting SIS-FENStatS (2026), Roma, Italy**
Talk title: Weighted Pseudo-Metrics for Finite-Sample Improvement in Functional Nonparametric Regression

25-27/06/2025 **Poster presentation at the International Workshop on Functional and Operatorial Statistics (IWFOS), Novara, Italy**
Poster title: Improving Finite Samples Performances in Nonparametric Functional Regression by Using Weighted Pseudo-metrics

25-27/06/2025 **Poster presentation at the International Workshop on Functional and Operatorial Statistics (IWFOS), Novara, Italy**
Poster title: Complexity mixture processes

17-20/06/2024 **Contributed talk at the 52nd Scientific meeting of the Italian Statistical Society (2024), Bari, Italy**
Talk title: A bootstrap approach to account for model selection in Multiple Systems Estimation

11-13/09/2023 **Contributed talk at the 14th Scientific meeting Classification and Data Analysis group, Salerno, Italy**
Talk title: Goodness-of-fit test for the Single Functional Index Model

23/06/2021 **Contributed talk at the International Workshop for Functional and Operatorial Statistics, online**
Talk title: About the complexity of a Functional Time Series

16-24/09/2016 **Poster presentation at International Conference on Quasicrystals, Kathmandu, Nepal**
Poster title: Inflation-based sequences with absolutely continuous spectrum

TEACHING

2022-2026 **Statistics for finance (Master level)** Course leader and lecturer
Institution: Universita del Piemonte Orientale, Italy
Scientific sector: STAT-01/A (ex. SECS-S/01)
Course hours and credit: (60 hours) 8 ECTS
Duties: Preparation of lecture slides, homework sheets and solutions, R codes, exams and management of teaching website. Delivery of lectures and R tutorials and exam marking and oral evaluation
Number of students: around 30 students

2023-2026 **Laboratorio di Statistica (Bachelor level) in Italian** Course leader and lecturer
Institution: Universita del Piemonte Orientale, Italy
Scientific sector: STAT-01/A (ex. SECS-S/01)
Course hours and credit: (20 hours) 2 ECTS
Duties: Preparation of homework sheets and solutions and management of teaching website. Delivery of lectures.
Number of students: around 200 students

2023-2026 **Nonparametric Statistics (Master level)** Course leader and lecturer
Institution: University of Birmingham, United Kingdom
Scientific sector: STAT-01/A (ex. SECS-S/01)
Course hours and credit: Lecture: 24 hours, Guided independent study: 76 hours 5 ECTS
Duties: Creation of lecture slides, homework sheets and solutions, R codes, exams and management of teaching website. Delivery of lectures, problem classes, R tutorials and exam marking.
Number of students: around 20 students

2024-2025 **Statistics (Bachelor level)** Course leader and lecturer
Institution: University of Birmingham, United Kingdom
Scientific sector: STAT-01/A (ex. SECS-S/01)
Course hours and credit: 24 hours 5 ECTS
Duties: Creation of lecture slides, homework sheets and solutions, R codes, exams and management of teaching website. Delivery of lectures, problem classes and exam marking.
Number of students: around 300 students

2021-2022 **Statistics for finance (Master level)** Teaching assistant
Scientific sector: STAT-01/A (ex. SECS-S/01)
Course hours: 60 hours

2014-2015 **London taught course centre's PhD course Aperiodic order** Teaching assistant
Duties: Marking assignments (10 hours) and assisting in tutorials (2.5 hours)

COURSE MATERIAL DESIGN ASSISTANCE

2014-2015 **London taught course centre's PhD course Aperiodic order** Teaching assistant
Duties: I proof-read his online slides and homework. Further, I proof-read and gave suggestion to a condensed version of his course material which later became a chapter in the book *Dynamical and Complex Systems, LTCC Advanced Mathematics Series volume 5*

2014-2015 **Online course material (textbooks)** Teaching assistant
Institution: The Open University, United Kingdom
Duties: I proof-read, went through textbooks material and provided feedback for M337 Complex analysis and MST124 Essential Mathematics I. The latest version of the textbook materials are now in print.

SUPERVISION

2024-present **Universita del Piemonte Orientale, Italy**
Bachelor and master theses supervisors

2019 **Knowledge Media Institute, The Open University**
Mentored German exchange student Marcus Voss on energy disaggregation project

2017 **School of Mathematics and Statistics, The Open University**
Mentored French exchange student Nicolas Laube on aperiodic tiling

REFEREE FOR JOURNALS

- Computational Statistics
- Computational statistics and Data analysis
- Journal of American Statistical Association
- Statistics and Computing

REFEREE FOR GRANTS

- UK research and innovation future leaders fellowships (2023)

ORGANISATION OF SESSIONS IN CONFERENCES

25-28/08/2026 **Organised session at the 27th International Conferences on Computational Statistics, Athens, Greece**
Role: Co-organiser
Session: Theory and practice of functional statistics, Joint with Prof. Enea Bongiorno

25-27/06/2025 **International workshop on Functional and Operatorial Statistics, Novara, Italy**
Role: Member of the organising committee

27-30/08/2024 **Organised session at the 26th International Conferences on Computational Statistics, Giessen, Germany**
Role: Co-organiser
Session: Advances in functional data analysis, Joint with Prof. Enea Bongiorno

22-25/08/2023 **Organised session at the 25th International Conferences on Computational Statistics, London, United Kingdom**
Role: Co-organiser
Session: Advances in functional data: Theory and applications, Joint with Prof. Enea Bongiorno

DEPARTMENTAL ADMINISTRATION

2025-present **Committee member for entrance exam for Laurea Magistrale in Finance**
DiSEI, Università del Piemonte Orientale "A. Avogadro", Novara, Italy

2025-present **Committee member for TOLC**
DiSEI, Università del Piemonte Orientale "A. Avogadro", Novara, Italy

2022-present **Committee for evaluation of applications of contracted professors or teachers**
DiSEI, Università del Piemonte Orientale "A. Avogadro", Novara, Italy

2022-present **Committee for evaluation of English capability for entry to master level courses**
DiSEI, Università del Piemonte Orientale "A. Avogadro", Novara, Italy

MEMBER OF INTERNATIONAL WORKING GROUP

2022-2026 **COST Action CA21163 "HiTEc", "Text, functional and other high-dimensional data in econometrics: New models,methods,applications"**
Grant funded by European Union

09/2019-03/2020 **Responsive Algorithmic Enterprise: Energy management system for SMEs**
Role: Co-investigator
Institution: Knowledge Media Institute, the Open University, Milton Keynes, United Kingdom
Funded externally by AND technology and research
Principal investigator: Dr. Danica Greetham

08/2018-07/2019 **Data and Measurement Programme**
Institution: Rights lab at the University of Nottingham, United Kingdom
Funded by the University of Nottingham Beacon of excellence programme
Principal investigators: Professor Doreen Boyd, Sir Bernard W. Silverman, Fellow of the Royal Society

MEMBERSHIPS IN ACADEMIC SOCIETIES

- Member of Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni, InDAM
- Member of the Società Italiana di Statistica
- Fellow of the Royal Statistical Society

COMPUTER SKILLS

- R (with experience of writing CRAN approved package)
- Python (Implemented Factorial Hidden Markov Models and Combinatorial optimisation on energy data set)
- Matlab (Implemented state of the art classification algorithms)
- LaTeX(Articles and report writing)