

# ARTHUR CHARPENTIER

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🐦 freakonometrics | 🎓 scholar | URL: <https://freakonometrics.github.io/>

## Topics

Predictive Modeling, Actuarial Science & Insurance, Mathematics Economics, Networks & Algorithms, Statistics & Econometrics, Statistics & Machine Learning, Climate Modeling, Extremes & Dependence, Inequalities & Fairness

## Bio

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### Experience

<b>Université du Québec à Montréal</b> <i>Professor, Mathematics Department</i>	Montréal, Canada <i>since 2018</i>
<b>Université de Rennes</b> <i>Professor, Faculty of Economics</i>	Rennes, France <i>2017-2018</i>
<b>Institut des Actuaire</b> <i>Director, Data Science for Actuaries Program</i>	Paris, France <i>2015-2018</i>
<b>Université de Rennes</b> <i>Assistant Professor - Maître de Conférences, Faculty of Economics</i>	Rennes, France <i>2014-2017</i>
<b>Université du Québec à Montréal</b> <i>Professor, Mathematics Department</i>	Montréal, Canada <i>2011-2014</i>
<b>Université de Montréal</b> <i>Visiting Professor, Mathematics Department</i>	Montréal, Canada <i>2010-2011</i>
<b>Université de Rennes</b> <i>Assistant Professor - Maître de Conférences, Faculty of Economics</i>	Rennes, France <i>2007-2010</i>
<b>École Nationale de la Statistique et d'Analyse de l'Information</b> <i>ENSAI, Lecturer</i>	Ker Lann, France <i>2006-2007</i>
<b>École Nationale de la Statistique et de l'Administration Économique</b> <i>ENSAE, Lecturer</i>	Malakoff, France <i>2002-2006</i>
<b>French Federation of Insurers</b> <i>FFSA, Statistics department</i>	Paris, France <i>2001-2002</i>
<b>AXA General Insurance Hong Kong Limited</b> <i>Pricing and Reserving Actuary</i>	Hong Kong, China <i>1999-2001</i>
<b>Exane</b> <i>Fixed Income Research Department</i>	Paris, France <i>1998-1999</i>

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### Education

<b>Université de Rennes</b> <i>Habilitation à diriger des recherches</i>	Rennes, France <i>2017</i>
<b>Katholieke Universiteit Leuven</b> <i>Doctor in de Wetenschappen Wiskunde - PhD in Applied Mathematics</i>	Leuven, Belgium <i>2006</i>

<b>École Nationale de la Statistique et de l'Administration Économique</b> <i>ENSAE, MSc. in statistics &amp; actuarial science</i>	Malakoff, France 1999
<b>Université Paris Dauphine</b> <i>MSc. in mathematical economics &amp; finance</i>	Paris, France 1999

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#### Honors and other activities

<b>Risks</b> <i>Member of the Editorial Board</i>	since 2019
<b>Astin Bulletin Editorial Board</b> <i>Journal of the International Actuarial Association, member of the Editorial Board</i>	since 2018
<b>European Actuarial Journal</b> <i>Associate Editor</i>	since 2014
<b>Institut des Actuaires Fellow</b> <i>Member of the International Actuarial Association (IAA)</i>	Paris, France since 2003

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#### Selected recent services

<b>HCÉRES</b> <i>Evaluation committee president</i>	Paris, France 2020
<b>FRQNT Grants</b> <i>Member of the jury (B1/B2/B3-03E), Master, PhD, Postdocs</i>	Québec, Canada since 2019
<b>Faculty of Science, UQAM</b> <i>Member of the Research Committee</i>	Montréal, Canada since 2018
<b>Bachelor Program in Actuarial Science, UQAM</b> <i>Member of the supervising committee</i>	Montréal, Canada since 2018

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#### Data & Code

<b>Insurance Pricing Game</b> <a href="http://pricing-game.com/">http://pricing-game.com/</a> with Imperial College	AICrowd 2020-2021
<b>CASDataset</b> <a href="http://cas.uqam.ca/">http://cas.uqam.ca/</a>	R 2017

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#### Dissemination

<b>Hypotheses Blog Notebook</b> <a href="https://freakonometrics.hypotheses.org/">https://freakonometrics.hypotheses.org/</a> ~ 1.2 million visitors, 3 million page views per year	since 2008
<b>Twitter account</b> <a href="https://twitter.com/freakonometrics">@freakonometrics</a> <i>Scientific dissemination, ~ 27,800 followers</i>	since 2010
<i>Coronavirus : un pic très net de mortalité en France depuis le 1er mars...</i>	Le Monde 2020
<i>#fakenews : non, l'IA ne peut pas prédire les émeutes</i>	Sciences & Vie 2019
<i>Les données actuarielles des assureurs, un trésor pour la connaissance client ?</i>	Les Echos 2018
<i>Arthur Charpentier on Freakonometrics, Machine Learning and Big Data</i>	Economic Rockstar 2018
<i>Les Cat Bonds ont de l'avenir</i>	France Culture 2018
<i>Coupe du Monde 2018 : des chercheurs de Rennes prévoient la victoire de la France</i>	RTL 2018
<i>Peut-on vraiment prévoir la probabilité de gagner une élection présidentielle ?</i>	La Tribune 2017
<i>Le casino des catastrophes</i>	La Revue Dessinée 2016
<i>How social media usage does and does not predict protests</i>	Washington Post, 2015
<i>You can vote twice! The many political appeals of proxy votes in France</i> see <a href="https://freakonometrics.github.io/dissemination/">https://freakonometrics.github.io/dissemination/</a> for more details	Washington Post, 2014

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## Selected expertise

<b>International Monetary Fund (IMF)</b> <i>Assessing Central Bank Solvency</i>	Washington DC, US 2021
<b>International Fund for Agricultural Development (IFAD) United Nations</b> <i>NLP and Topic Modeling</i>	Roma, Italy 2020-2021
<b>HMG Finance</b> <i>First-In First-Out (FIFO) vs Last-In First-Out (LIFO), perpetual rents</i>	Paris, France 2012

## Academic activities


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### Recent conferences organized

<b>Emerging Insights in Insurance Statistics</b> <i>with E. Valdez, J. Cao &amp; H. Jeong</i>	BIRS, Banff, Canada 2022
<b>3rd Insurance Data Science conference</b> <i>with M. Gesmann, I. Kyriakou, S. Pesenti &amp; A. Tsanakas</i>	London, UK 2021
<b>36th Meeting of the Canadian Econometric Study Group</b> <i>Machine Learning Econometrics, at UQAM (scientific committee)</i>	Montreal, Canada 2019
<b>Atlantic Causal Inference Conference</b> <i>University McGill (scientific committee)</i>	Montreal, Canada 2019
<b>Workshop on data science for actuarial applications</b> <i>ACTINFO Chair, with Chairs at University CB Lyon (ISFA)</i>	Paris, France 2018
<b>Workshop on multivariate inequalities</b> <i>ANR Ordineq, with O. L'Haridon &amp; B. Taroux</i>	Rennes, France 2018

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### Selected talks at conferences


<b>Actuarial Sciences and Applications</b> <i>title to be confirmed (invited)</i>	CIRM, Luminy, France 2022
<b>Social Consequences of Algorithmic Forecast</b> <i>title to be confirmed (invited)</i>	Bologna, Italy 2021
<b>Workshop on Applications of Mean Field Games</b> <i>title to be confirmed (invited speaker)</i>	Chicago, US 2021
<b>MODCOV19-CNRS</b> <i>Modèles épidémiologiques pour analyse coût-efficacité sous incertitude ((invited speaker))</i>	Paris, France 2020
<b>Machine learning for economists and applied social scientists</b>  <i>Machine Learning in Actuarial Science &amp; Insurance (plenary speaker)</i>	Hallifax, Canada 2020
<b>Actuarial and Financial Mathematics Conference</b> <i>Insurance Pricing in Competitive Markets (invited speaker)</i>	Brussels, Belgium 2020
<b>Online International Conference in Actuarial science and finance</b> <i>Modeling Joint Lives within Families</i>	Lyon, France 2020
<b>Risk Analytics Conference</b> <i>Actuarial Pricing and Competition, University of Illinois (keynote speaker)</i>	Chicago, US 2019
<b>UCSB InsurTech Summit</b> <i>Insurance Pricing in Competitive Markets (invited speaker)</i>	Santa Barbara, US 2019

<b>Natural Catastrophe Economics Workshop</b>	Zürich, Swiss
<i>Assessing Probabilities with Climate Change (invited speaker)</i>	2019
<b>XXVIIIth International Biometric Conference</b>	Barcelona, Spain
<i>Collaborative Genealogical Data in Demography (invited session)</i>	2018
<b>European R Users Meeting</b> 	Budapest, Hungary
<i>Collaborative Genealogical Data in Demography (invited speaker)</i>	2018
<b>Ecole Thématique sur l'Évaluation des Politiques Publiques</b>	Aussois, France
<i>Evaluation du préjudice corporel en assurance automobile (invited speaker)</i>	2018
<b>Big data empirics and policy analysis</b>	Bank of England, London, UK
<i>Insurance: Risk Pooling or Price Segmentation (keynote speaker)</i>	2017
<b>Artificial Intelligence for fintech and insurtech</b>	IHP, Paris, France
<i>Insurance Pricing and Competition (invited speaker)</i>	2017
<b>New challenges in the measurement of economic inequalities</b>	Marseille, France
<i>Extended Pareto Models and Incomes (invited speaker)</i>	2017
<b>Cartostats</b>	Université Paris Diderot, France
<i>La Ville en Économie (invited speaker)</i>	2017
<b>Dependence Modelling with Applications in Finance and Insurance</b>	Athens, Greece
<i>Insurance Pricing and Competition</i>	2017
<b>Comprendre et Anticiper la Révolution du Numérique en Assurance</b>	Caen, France
<i>Assurance et Responsabilité (invited speaker)</i>	2017
<b>Statistical Learning and Data Science</b>	Erasmus University, Rotterdam, Netherlands
<i>Quantiles and Expectiles (invited speaker)</i>	2017
<b>Sciences XXL</b>	INED, Paris, France
<i>Collaborative Data in Genealogy (invited speaker)</i>	2017
<b>3rd International MACroeconomics workshop (IMAC)</b>	Rennes, France
<i>From Micro to Macro (invited speaker)</i>	2016
<b>Ordinal and Multidimensional Inequalities</b>	Montpellier, France
<i>Pareto Models and Incomes (invited speaker)</i>	2016
<b>Droit des données personnelles</b>	Amiens, France
<i>Assurance &amp; RGPD (règlement général sur la protection des données) (invited speaker)</i>	2016
<b>3rd EAJ Conference</b>	Lyon, France
<i>Big Data and Insurance (invited speaker)</i>	2016
<b>International Conference on Applied Business and Economics</b>	Nanterre, France
<i>Natural Catastrophes and Government Intervention</i>	2016
<b>Big Data : la recherche s'expose</b>	Paris, France
<i>Big Data and Insurance</i>	2016
<b>Centre for Central Banking Studies</b>	Bank of England, London, UK
<i>Big Data and Insurance (keynote speaker)</i>	2016
<b>Asociación Española de Gerencia de Riesgos y Seguros</b>	Barcelona, Spain
<i>Machine Learning and Insurance (keynote speaker)</i>	2016
<b>Big Data &amp; Environment</b>	Buenos Aires, Argentina
<i>Impact of time Granularity on Statistical Modeling (invited speaker)</i>	2015
<b>A BE Summer School</b>	Louvain, Belgium
<i>Machine Learning and Insurance (keynote speaker)</i>	2015

<b>ACP meeting</b>	Leuven, Belgium
<i>Big and Small Data in Insurance (invited speaker)</i>	2015
<b>Journées de Statistiques</b>	Lille, France
<i>Probit transformation for nonparametric kernel estimation of the copula density</i>	2015
<b>22nd International Forecasting Financial Markets Conference</b>	Rennes, France
<i>Copulas and Finance</i>	2015
<b>Insurance &amp; Finance Colloquium</b>	Le Mans, France
<i>Risk Measures and Pareto Models</i>	2015
<b>R in Insurance</b>	London, UK
<i>Getting into Bayesian Wizardry... with the eyes of a muggle actuary (keynote speaker)</i>	2014
<b>SSC annual conference</b>	Toronto, Canada
<i>Risk Measures and Pareto Models</i>	2014
<b>Mathematical Finance Days</b>	HEC Montréal, Canada
<i>Risk Measures and Pareto Models</i>	2014
<b>World Social Science Forum (UNESCO)</b>	Montréal, Canada
<i>Academic Blogging</i>	2013
<b>Mathematical Finance Days</b>	HEC Montréal, Canada
<i>Quantiles Estimation from Heavy Tailed Distribution</i>	2013
<b>6th R/Rmetrics Summer School on Computational Finance</b>	Meielisalp, Swiss
<i>Actuarial Science with R (invited speaker)</i>	2012
<b>Journées de la Société Canadienne de Sciences Economiques,</b>	Mont Tremblant, Canada
<i>Modeling dynamic incentives an application to basketball</i>	2012
<b>Québec-Ontario Workshop on Insurance Mathematics</b>	Montréal, Canada
<i>Quantiles Estimation from Heavy Tailed Distribution</i>	2012
<b>Mathematical Finance Days</b>	HEC Montréal, Canada
<i>Fast Computations on Binomial Trees</i>	2012
<b>Journées de la Société canadienne de sciences économiques</b>	Sherbrooke, Canada
<i>Insurance of Natural Catastrophes When Should Government Intervene ?</i>	2011
<b>Changement climatique et gestion des risques</b>	Lyon, France
<i>Modeling heat-waves: return period for non-stationary extremes</i>	2011
<b>Journées d'Etudes Statistique</b>	Luminy, France
<i>Copulas, Insurance and Risk Measures</i>	2010
<b>IA-Lyon Summer School</b>	Lyon, France
<i>Solvency II' newspeak 'one year uncertainty for IBNR' : the bootstrap approach</i>	2010
<b>Financial Risks International Forum</b>	Paris, France
<i>Multiple Risk Measures</i>	2010
<b>Assessment and Mitigation of Emerging Risks</b>	Paris, France
<i>Emerging risks: an actuarial perspective</i>	2009
<b>R.I.S.K. Symposium</b>	Paris, France
<i>Incertitude des régimes des retraites</i>	2009
<b>Workshop Finance &amp; Insurance</b>	Sao Paulo, Brazil
<i>Estimation of quantile related risk measures (invited speaker)</i>	2009
<b>Workshop on Actuarial Science</b>	Belo Horizonte, Brazil
<i>IBNR and quantification of uncertainty</i>	2009
<b>7th International Workshop on Rare Event Simulation (RESIM)</b>	Rennes, France
<i>Optimal Reinsurance with ruin probability target</i>	2008

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## Selected talks at academic seminars

<i>Institut Louis Bachelier</i>	<i>Paris, France, 2021</i>
<i>HEC Montréal, IRE - CREE Seminar</i>	<i>Montréal, Canada, 2021</i>
<i>Science Po (TransNum)</i>	<i>Paris, France, 2020</i>
<i>University of Connecticut, Actuarial Seminar</i>	<i>Storrs, CT, US, 2020</i>
<i>University of New South Wales (UNSW)</i>	<i>Sydney, Australia, 2020</i>
<i>Aix-Marseille School of Economics (AMSE)</i>	<i>Marseille, France, 2020</i>
<i>European Network for Business and Industrial Statistics (ENBIS)</i>	<i>Palaiseau, France, 2020</i>
<i>Paris Machine Learning Group</i>	<i>Paris, France, 2020</i>
<i>CMAP, École Polytechnique</i>	<i>Palaiseau, France, 2020</i>
<i>AICS </i>	<i>Toronto, Canada, 2020</i>
<i>Chaire Pari (Programme sur l'Appréhension des Risques et des Incertitudes)</i>	<i>Paris, France, 2019</i>
<i>ESSEC Risk Seminar</i>	<i>Paris, France, 2019</i>
<i>University of California, Actuarial &amp; Statistical Seminar</i>	<i>Santa Barbara, CA, US, 2019</i>
<i>University of Wisconsin, Risk &amp; Insurance Semainar</i>	<i>Madison, WI, US, 2019</i>
<i>University of Waterloo, Actuarial Seminar</i>	<i>Waterloo, Canada, 2019</i>
<i>UQAM, LATECE, Computer Science Seminar</i>	<i>Montreal, Canada, 2019</i>
<i>Université Laval, Quantact Actuarial Seminar</i>	<i>Québec, Canada, 2019</i>
<i>UQAM, Economics Seminar</i>	<i>Montreal, Canada, 2018</i>
<i>Telecom ParisTech</i>	<i>Paris, France, 2018</i>
<i>Università degli Studi dell'Insubria, Economics Seminar</i>	<i>Varese, Italy, 2018</i>
<i>ESSEC Risk Seminar</i>	<i>Paris, France, 2018</i>
<i>Université Laval, Economics Seminar</i>	<i>Québec, Canada, 2018</i>
<i>University of Michigan, Mathematics Seminar</i>	<i>Ann Arbor, US, 2017</i>
<i>Université de Caen, Economics Seminar</i>	<i>Caen, France, 2017</i>
<i>Université Paris Diderot, Statistics Seminar</i>	<i>Paris, France, 2016</i>
<i>Université Catholique de Louvain</i>	<i>Louvain, Belgium, 2015</i>
<i>GERAD, Montréal</i>	<i>Canada, 2014</i>
<i>Université Laval, Computational Science Seminar</i>	<i>Quebec, Canada, 2014</i>
<i>Centro de Investigación en Matemáticas</i>	<i>Guanajuato, Mexico, 2014</i>
<i>Universiteit van Amsterdam</i>	<i>Amsterdam, Netherlands, 2013</i>
<i>HEC Lausanne, Actuarial Seminar</i>	<i>Lausanne, Switzerland, 2013</i>
<i>GeoTop</i>	<i>Montréal, Canada, 2012</i>
<i>Université Laval, Statistical Seminar</i>	<i>Québec, Canada, 2011</i>
<i>Université Laval, Business School Seminar</i>	<i>Québec, Canada, 2011</i>
<i>Université Laval, Actuarial Seminar</i>	<i>Québec, Canada, 2011</i>
<i>HEC Montréal</i>	<i>Canada, 2010</i>
<i>McGill University, Statistical Seminar</i>	<i>Montréal, Canada, 2010</i>
<i>Université de Rennes, Economics Seminar</i>	<i>Rennes, France, 2010</i>
<i>ESSEC Risk Seminar</i>	<i>Paris, France, 2009</i>
<i>Université de Montpellier</i>	<i>Montpellier, France, 2009</i>
<i>Université de Brest</i>	<i>Brest, France, 2009</i>
<i>Université de Rennes</i>	<i>France, 2008</i>
<i>Université de Nantes</i>	<i>Nantes, France, 2008</i>
<i>Université Pierrre &amp; Marie Currie</i>	<i>Paris, France, 2008</i>

<i>Universiteit van Amsterdam</i>	<i>Amsterdam, Netherlands, 2008</i>
<i>Université de Toulouse 1</i>	<i>Toulouse, France, 2007</i>
<i>Imperial College</i>	<i>London, UK, 2007</i>
<i>PSE ENS Cachan</i>	<i>Paris, France, 2007</i>
<i>Université de Grenoble</i>	<i>Grenoble France, 2007</i>
<i>Université Paris Nanterre</i>	<i>Nanterre, France, 2007</i>
<i>Université de Compiègne</i>	<i>Compiègne, France, 2007</i>
<i>Universidad de Valparaíso</i>	<i>Chile, 2006</i>
<i>ENSAI</i>	<i>Rennes, France, 2006</i>
<i>PSE Paris Sorbonne</i>	<i>Paris, France, 2006</i>
<i>Katholieke Universiteit Leuven</i>	<i>Leuven, Belgium, 2006</i>
<i>Institut de mathématiques appliqués</i>	<i>Angers, France, 2006</i>

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Selected talks at practitioners seminars

<b>Data Driven Montréal</b> <i>Data science and insurance (Meetup)</i>	Montréal, Canada 2021
<b>TD Insurance</b> <i>Insurance pricing in competitive markets</i>	Montréal, Canada 2020
<b>Autorité de contrôle prudentiel et de résolution (ACPR)</b> <i>Insurance pricing in competitive markets</i>	Paris, France 2019
<b>SCOR, Rencontres Mutualistes</b> <i>Insurance pricing in competitive markets</i>	Beaune, France 2018
<b>AON Benfield, Journées du marché</b> <i>Insurance and climate</i>	Paris, France 2018
<b>Data science conference, Generali</b> <i>Machine learning in insurance</i>	Paris, France 2016
<b>Institut des Actuaire, Big Data Semimar</b> <i>Machine learning in insurance</i>	Paris, France 2015
<b>Society of Actuaries, Predictive Modeling Seminar</b> <i>From Generalized Linear Models to Trees</i>	Chicago, IL, US 2013
<b>Desjardins Reserving Seminar</b> <i>One-year uncertainty</i>	Montréal, Canada 2011
<b>Milliman Reserving Seminar</b> <i>One-year uncertainty</i>	Paris, France 2010

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Referee for peer reviewed journals

Stochastic Environmental Research and Risk Assessment, Theory and Decision, Insurance: Mathematics and Economics, Journal of Banking and Finance, The Canadian Journal of Statistics, Journal of Computational and Graphical Statistics, Journal of Multivariate Analysis, Communications in Statistics: Theory and Methods, Quantitative Finance, Journal of the American Statistical Association, TEST, Asia-Pacific Journal of Financial Studies, Statistics and Decision, Kybernetika, European Journal of Finance, Mathematics and Financial Economics, Statistica Sinica, Extremes, Physics and Chemistry of the Earth, Computational Statistics, Geneva Papers on Risk and Insurance, Bernoulli, Water Ressources, Statistics & Probability Letters, Mathematical Finance, Journal of Risk, Journal of Hydrology, Scandinavian Actuarial

Journal, Advances in Statistical Analysis, European Actuarial Journal, Metrika, Journal of Statistical Planning and Inference, Annals of Applied Statistics, Constructive Approximation, Econometric Reviews, Annals of Economics and Statistics, Annals of Actuarial Science, Journal of the Royal Statistical Society – Series B, Mathematics of Social Sciences, Economic Theory, ASTIN Bulletin, Journal of Statistical Software, Journal of Population Economics, Risks, Journal of Zhejiang University - Science A, Journal of Time Series Analysis, European Journal of Operation Research, Econometrica, Dependence Modeling, Journal of Economic Behavior & Organization, Annals of Actuarial Science, Entropy, Sustainability, Risk Analysis, Journal of Statistical Computation and Simulation, North American Actuarial Journal, IEEE Transactions on Information Theory, Remote Sensing

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## Reviewer activities

### Tenure review

UC Santa Barbara, HEC Lausanne, Heriot-Watt University, University of Madison Wisconsin

### Grants

ANR (Agence Nationale pour la Recherche, France) AXA Research Fund FNR Luxembourg CORE program (Luxembourg) FRQNT (Fonds de Recherche du Québec - Nature & Technologie, Canada) F.R.S.-FNRS (Fonds de la Recherche Scientifique, Belgique) MICTACS (Mathematics of Information Technology and Complex systems, Canada) NSA (National Security Agency - Mathematical Sciences Grant Program - U.S.A.) NSERC (Natural Sciences and Engineering Research Council, Canada) IVADO (Institut de valorisation des données, Canada) ANRT (Agence Nationale Recherche & Technologie, France)

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## Selected research visits (> 1 week)

<b>University of California</b> <i>visiting Mike Ludkovski</i>	Santa Barbara, CA, US 2019
<b>Universitat de Barcelona</b> <i>visiting Montserrat Guillen</i>	Barcelona, Spain 2018
<b>Università degli Studi dell'Insubria</b> <i>visiting Raffaello Seri</i>	Varese, Italy 2018
<b>Harvard University</b> <i>visiting Christine Choirat &amp; Pierre Jacob</i>	Cambridge, US 2017
<b>Universitat de Barcelona</b> <i>visiting Montserrat Guillen</i>	Barcelona, Spain 2016
<b>Centro de Investigación en Matemáticas</b> <i>visiting Victor Rivero</i>	Guanajuato, Mexico 2014
<b>Universidade Federal de Minas Gerais</b> <i>visiting Renato Assunção</i>	Belo Horizonte, Brazil 2013

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## Master students

<i>Lariosse Kouakou</i>	<i>Université de Brest, France, 2020</i>
<i>Elie Odin</i>	<i>ENS Ker Lann, France, 2020</i>
<i>Apollinaire Barme</i>	<i>ENSAE, Paris, France, 2019</i>



<i>Molly James</i>	<i>Université de Brest, France, 2019</i>
<i>Enora Belz</i>	<i>Université de Rennes, France, 2017</i>
<i>Clothilde Davesne</i>	<i>ENSAE, Paris, France, 2015</i>
<i>Julie Viard</i>	<i>ENSAE, Paris, France</i>
<i>Ewen Gallic</i>	<i>Université de Rennes, France,</i>
<i>Clément Pravin</i>	<i>ENSAE, Paris, France</i>
<i>François Portier</i>	<i>Université de Rennes, France</i>
<i>Emmanuel Dupuy</i>	<i>ENSAE, Paris, France</i>
<i>Jeremy Payen</i>	<i>ENSAE, Paris, France</i>
<i>Clément Pravin</i>	<i>ENSAE, Paris, France</i>
<i>Benjamin Favetto</i>	<i>ENS Ker Lann, Rennes, France,</i>
<i>Angelo Caria</i>	<i>Centre d'Études Actuarielles,</i>
<i>Kevin Masset</i>	<i>ENSAE, Paris, France</i>
<i>Thomas Anglade</i>	<i>ENSAE, Paris, France</i>
<i>Arnaud At</i>	<i>ENSAE, Paris, France</i>
<i>Gilles Chau</i>	<i>ENSAE, Paris, France</i>
<i>An Dinh</i>	<i>ENSAE, Paris, France</i>
<i>Aurélien Fortin</i>	<i>ENSAE, Paris, France</i>
<i>Marc Lenoir</i>	<i>ENSAE, Paris, France</i>
<i>Jérôme Ternat</i>	<i>ENSAE, Paris, France</i>
<i>Emilie Quémat</i>	<i>ENSAE, Paris, France</i>
<i>Khalil Antoine al Dayri</i>	<i>ENSAE, Paris, France</i>
<i>Jean-Christophe Bouëtté</i>	<i>ENSAE, Paris, France</i>
<i>Jean-François Chassagneux</i>	<i>ENSAE, Paris, France</i>
<i>David Sibai</i>	<i>ENSAE, Paris, France</i>

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#### PhD Students supervision

<b>Samuel Stocksieker</b>		
<i>Unbalanced Datam co-supervised with D. Pommeret</i>		<i>2020-today</i>
<b>Enora Belz</b>		
<i>Etude de données agrégées et mesures d'inégalités</i>		<i>2016-today</i>
<b>Antoine Ly</b>	now Data Science at SCOR	
<i>Algorithmes de machine learning en assurance, co-supervised with R. Élie</i>		<i>2015-2019</i>
<b>Amadou Barry</b>	now McGill	
<i>La régression expectile pour données longitudinales, co-supervised with K. Oualkacha</i>		<i>2013-2019</i>

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#### Post-doctoral supervision

<b>Ewen Gallic</b>	now Aix Marseille School of Economics	
<i>Extracting information from collaborative genealogical data</i>		<i>2017-2018</i>
<b>Arnaud Goussebaïle</b>	now ETH Zürich	
<i>Insurance and prevention of natural catastrophes</i>		<i>2016-2017</i>

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## Jury (PhD & Habilitation)

<b>Nabil Kazi-Tani</b> <i>Contrôle stochastique, mesures de risque et théorie de la ruine</i>	Université de Lyon 1 2021
<b>Loann Desboulets</b> <i>Variable selection on non-linear manifolds</i>	Aix-Marseille School of Economics 2020
<b>Lenin Arango Castillo</b> <i>Long-range dependence in stationary Gaussian time series</i>	Queen's University 2020
<b>Sander Devriendt</b> <i>Sparse predictive modeling with applications in insurance pricing and mortality forecasting</i>	KU Leuven 2020
<b>Pierrick Piette</b> <i>Contributions de l'Apprentissage Statistique à l'Actuariat</i>	Université de Lyon 1 2019
<b>Oscar Alberto Quijano Xacur</b> <i>Computational Bayesian Methods for Insurance Premium Estimation</i>	Concordia University, Montréal 2019
<b>Yang Jiao</b> <i>Applications of Artificial Intelligence in E-Commerce and Finance</i>	Telecom SudParis 2018
<b>Edouard Debonneuil</b> <i>Analyses prospectives de mortalité : approches actuarielle et biomédicale</i>	Université de Lyon 1 2018
<b>Alexandre Godzinski</b> <i>Three empirical essays on moral hazard identification in insurance</i>	EHESS, PSE, Paris 2017
<b>Fattouma Souissi</b> <i>Gini-PLS regression: an application on agriculture incomes inequalities</i>	Université de Montpellier 2016
<b>Arnaud Goussebaïle</b> <i>Prevention and Insurance of Natural Catastrophes</i>	École Polytechnique 2015
<b>Leo Guelman</b> <i>Optimal personalized treatment learning models with insurance applications</i>	Universitat de Barcelona 2015
<b>Przemyslaw Sloma</b> <i>Contribution to the weak convergence of empirical copula processes</i>	Université Paris VI 2014
<b>Mathieu Pigeon</b> <i>Multivariate Skew Models with Applications in Loss Reserving and Reinsurance</i>	UC Louvain 2014
<b>Julien Tomas</b> <i>Quantifying biometric life insurance risks with nonparametric smoothing methods</i>	Uv Amsterdam 2013
<b>Aymric Kamega</b> <i>Outils adaptés au contexte de l'assurance vie en Afrique subsaharienne francophone</i>	Université Lyon I 2011
<b>Tarek Zari</b> <i>Contribution à l'étude du processus empirique de copule</i>	Université Paris VI 2010
<b>Meriem Maatig</b> <i>Effets des comportements risqués des conducteurs sur la sinistralité</i>	Université Paris II Assas 2010
<b>Noureddine Ben Lagha</b> <i>Nouvelles approches de l'étude de la sinistralité en assurance automobile</i>	Université Paris II Assas 2008

## Grants

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## Financial Grants

<b>AXA Research Fund</b> <i>Joint research initiative, PI Single</i>	200,000€ 2020-2022
<b>Natural Sciences and Engineering Research Council of Canada</b> <i>Emerging Infectious Diseases Modelling Initiative</i>	2020-2022
<b>Natural Sciences and Engineering Research Council of Canada</b> <i>NSERC-CRSNG, Discovery Grant, PI Single</i>	\$100,000 2019-2025
<b>Institut des Actuaire Research Grant (France)</b> <i>PI Single</i>	\$8,000 2019
<b>Agence Nationale pour la Recherche</b> <i>ORDINEQ project Ordinal and Multivariate Inequalities (1/20th)</i>	525,000€ 2015-2019
<b>Institut Louis Bachelier</b> <i>ACTINFO Research Chair, co-PI, with Romuald Élie (1/2)</i>	558,000€ 2015-2018
<b>PEPS MoMIS, CNRS</b> <i>co-PI, with Frédéric Giroire (1/3)</i>	15,000€ 2015
<b>Natural Sciences and Engineering Research Council of Canada</b> <i>NSERC-CRSNG, Discovery Grant, PI Single</i>	\$70,000 2012-2014
<b>Institut Louis Bachelier</b> <i>Chaire Groupama-Dauphine, Travel Grant</i>	10,000€ 2010
<b>Agence Nationale pour la Recherche</b> <i>AST&amp;Risk Approches spatio-temporelles pour la modélisation du risque (1/20)</i>	500,000€ 2008-2012
<b>Institut Louis Bachelier</b> <i>Chaire AXA-ENSAE</i>	24,000€ 2010

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## Joint Projects

<b>MITACS (IVADO) &amp; Agryo</b> <i>Remote Sensing, Agriculture Risks and Insurance, joint with Y. Bouroubi</i>	2020
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## Publications

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### Published papers in peer reviewed journals

1. A. Charpentier, R. Élie, M. Laurière & V.C. Tran (2020) COVID-19 pandemic control: balancing detection policy and lockdown intervention under ICU sustainability. *Mathematical Modelling of Natural Phenomena* [doi:10.1051/mmnp/2020045](https://doi.org/10.1051/mmnp/2020045)
2. L. Barry & A. Charpentier (2020) Personalization as a Promise: Can Big Data Change the Practice of Insurance?. *Big Data & Society*. [doi:10.1177/2053951720935143](https://doi.org/10.1177/2053951720935143)
3. A. Charpentier & E. Gallic (2020) Can historical demography benefit from the collaborative data of genealogy websites?. *Population*, [doi:10.3917/popu.2002.0391](https://doi.org/10.3917/popu.2002.0391)
4. A. Charpentier & E. Gallic. (2019) Using collaborative genealogy data to study migration: a research note. *The History of the Family*, [doi:10.1080/1081602X.2019.1641130](https://doi.org/10.1080/1081602X.2019.1641130)
5. A. Charpentier, N., Ka, S. Mussard & O.H. Ndiaye (2019) Gini Regressions and Heteroskedasticity. *Econometrics*, 7, [doi:10.3390/econometrics7010004](https://doi.org/10.3390/econometrics7010004)

6. A. Charpentier, E. Flachaire & A. Ly (2018) Econometrics and Machine Learning. *Economics & Statistics*, doi:10.24187/ecostat.2018.505d.1970
7. A. Charpentier & B. Coulmont (2018) We are not alone ! (at least, most of us) *Significance*, doi:10.1111/j.1740-9713.2018.01108.x
8. A. Charpentier, A. David & R. Elie Optimal Claiming Strategies in Bonus Malus Systems and Implied Markov Chains. *Risks*, 2017 doi:10.3390/risks5040058
9. A. Charpentier & M. Pigeon Macro vs. Micro Methods in Non-Life Claims Reserving (an Econometric Perspective). *Risks*, 4: 1-18, 2016 doi:10.3390/risks4020012
10. G. Geenens, A. Charpentier & D. Paindaveine Probit transformation for nonparametric kernel estimation of the copula density. *Bernoulli*, 2017 doi:10.3150/15-BEJ798
11. A. Charpentier, A. Galichon & M. Henry Local Utility and Multivariate Risk Aversion. *Mathematics of Operations Research*, 41: 466-476, 2016 doi:10.1287/moor.2015.0736
12. A. Charpentier & E. Gallic Kernel density estimation based on Ripley's correction. *Geoinformatica*, 20: 95-116, 2016 doi:10.1007/s10707-015-0232-z
13. A. Charpentier & E. Flachaire Log-transform kernel density estimation of income distribution. *Actualité Economique*, 91 :141-149, 2015 doi:10.7202/1036917ar
14. C. Tavéra, J.-C. Poutineau, J.-S. Pentecôte, I. Cadoret-David, A. Charpentier, C. Guéguen, M. Huchet-Bourdon, J. Licheron & G. L'Oeillet The "Mother of All Puzzles" at thirty: a meta-analysis. *International Economics*, 141 :80-96, 2015 doi:10.1016/j.inteco.2015.01.001
15. M. T. Bastos, A. Charpentier & D. Mercea Tents, Tweets, and Events: The Interplay Between Ongoing Protests and Social Media. *Journal of Communication*, 65: 320–350, 2015 doi:10.1111/jcom.12145
16. A. Charpentier & B. Le Maux Natural catastrophe insurance: How should the government intervene?. *Journal of Public Economics*, 115: 1-17, 2014 doi:10.1016/j.jpubeco.2014.03.004
17. A. Charpentier, M. Durand Modeling earthquake dynamics. *Journal of Seismology*, 19: 721-739, 2015 doi:10.1007/s10950-015-9489-9
18. A. Charpentier, A.-L. Fougères, C. Genest & J.G. Nešlehová (2014) Multivariate Archimax copula. *Journal of Multivariate Analysis*, doi:10.1016/j.jmva.2013.12.013
19. A. Charpentier & S. Mussard (2011) Income Inequality Games. *Journal of Economic Inequality*, 9: 529–554, 2011 doi:10.1007/s10888-011-9184-1
20. A. Charpentier On the return period of the 2003 heat wave. *Climatic Change*, 109: 245–260, 2011 doi:10.1007/s10584-010-9944-0
21. A. Charpentier & A. Oulidi Beta kernel quantile estimators of heavy-tailed loss distributions. *Statistics and Computing*, 20: 35–55, 2010 doi:10.1007/s11222-009-9114-2
22. A. Charpentier & A. Oulidi Estimating allocations for value-at-risk portfolio optimization. *Mathematical Methods of Operations Research*, 69: 395, 2009 doi:10.1007/s00186-008-0244-7
23. A. Charpentier & J. Segers Tails of multivariate Archimedean copulas. *Journal of Multivariate Analysis*, 100: 1521–1537, 2009 doi:10.1016/j.jmva.2008.12.015

24. A. Charpentier & D. Sibai Dynamic flood modeling: combining Hurst and Gumbel's approach. *Environmetrics*, 20: 32–52, 2009 [doi:10.1002/env.909](https://doi.org/10.1002/env.909)
25. A. Charpentier Insurability of climate risks. *The Geneva Papers on Risk and Insurance*, 33: 91–109, 2008 [doi:10.1057/palgrave.gpp.2510155](https://doi.org/10.1057/palgrave.gpp.2510155)
26. A. Charpentier (2008) Dynamic dependence ordering for Archimedean copulas and distorted copulas. *Kybernetika*, 2008 [doi:10.1038/dmlcz/135890](https://doi.org/10.1038/dmlcz/135890)
27. A. Charpentier & J. Segers Convergence of Archimedean copulas. *Statistics and Probability Letters*, 2008 [doi:10.1016/j.spl.2007.07.014](https://doi.org/10.1016/j.spl.2007.07.014)
28. A. Charpentier & J. Segers Lower tail dependence for Archimedean copulas: Characterizations and pitfalls. *Insurance: Mathematics and Economics*, 2007 [doi:10.1016/j.insmatheco.2006.08.004](https://doi.org/10.1016/j.insmatheco.2006.08.004)
29. A. Charpentier & A. Juri (2006) Limiting dependence structures for tail events, with applications to credit derivatives. *Journal of Applied Probability*, [doi:10.1239/jap/1152413742](https://doi.org/10.1239/jap/1152413742)
30. J.-C. Boüette, J.-F. Chassagneux, D. Sibai, R. Terron. & A. Charpentier (2006) Wind in Ireland: long memory or seasonal effect?. *Stochastic Environmental Research and Risk Assessment*, [doi:10.1007/s00477-005-0029-y](https://doi.org/10.1007/s00477-005-0029-y)

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#### Books

1. A. Charpentier Computational Actuarial Science with R. CRC Press. 2014.
2. A. Charpentier & C. Dutang Actuariat avec R. CRAN. 2013.
3. M. Denuit, A. Charpentier Mathématiques de l'assurance non-vie - Tarification et provisionnement (Tome 2). Economica. 2005.
4. M. Denuit, A. Charpentier Mathématiques de l'assurance non-vie - Principes fondamentaux de théorie du risque (Tome 1). Economica. 2004.
5. Collective Actuarial Community Loss Data Analytics. An open text authored by the Actuarial Community. 2019.

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#### Dissemination papers

1. A. Charpentier, L. Barry & E. Gallic (2020) Quel avenir pour les probabilités prédictives en assurance ? *Annales des Mines* [pdf](#)
2. A. Charpentier (2020) Quel Big Data, GAFA et assurance. *Annales des Mines* [pdf](#)
3. R. Bigot & A. Charpentier (2019) Repenser la responsabilité, et la causalité. *Risques* [pdf](#)
4. A. Charpentier (2019) Les autorités publiques face aux risques, de la confiance au doute. *Risques*, 119.
5. A. Charpentier & B. Cherrier (2019) La valeur de la vie. *Risques*, 118 [pdf](#)
6. A. Charpentier (2019) Les classes de risques vont-elles plus loin que les stéréotypes?. *L'actuariel*, 32 [pdf](#).
7. A. Charpentier (2019) Du pari au "marché prédictif". *Variance.eu*, [pdf](#)

8. A.Charpentier (2019) Petite histoire des paris sportifs. *Variance.eu*, [pdf](#)
9. A.Charpentier (2018) Les réseaux pour réinventer l'assurance ?. *Risques*, [pdf](#)
10. A.Charpentier Histoire du hasard et de la simulation. *Risques*, 116.
11. A.Charpentier (2018) La représentation cartographique des villes. *Variance.eu*, 2018.
12. A.Charpentier news, post-truth, Wikipedia et blockchain : vérité et consensus. *Risques*, 115.
13. A.Charpentier L'intelligence artificielle dilue-t-elle la responsabilité ?. *Risques*, 114.
14. A.Charpentier Les modèles prédictifs peuvent-ils être loyaux et justes. *Risques*, 113.
15. A.Charpentier L'éthique de la modélisation dans un monde où la normalité n'existe plus. *Risques*, 112.
16. A.Charpentier Les marchés prédictifs comme technique de prévision. *Risques*, 111.
17. Antonio, K. & A.Charpentier La tarification par genre en assurance, corrélation ou causalité ?. *Risques*, 110.
18. A.Charpentier Les dérives du principe de précaution. *Risques*, 108.
19. A.Charpentier & R.Suire Données et santé: valeurs, acteurs et santé. *Risques*, 107.
20. A.Charpentier Fibonacci, les lapins, le nombre d'or et les calculs actuariels. *Risques*, 106.
21. A.Charpentier La guerre des étoiles: distinguer le signal et le bruit. *Risques*, 105.
22. A.Charpentier, A.Eyraut-Loisel, A., Hannart, A. & Tomas, J. Changement Climatique et Assurance. *Variances*, 54.
23. A.Charpentier & B.Cherrier 'Mathiness' et Assurance. *Risques*, 104.
24. A.Charpentier, M.Denuit, R.Elle Segmentation et Mutualisation, les deux faces d'une même pièce. *Risques*, 103.
25. A.Charpentier & A.Diogo Barry Big data : passer d'une analyse de corrélation à une interprétation causale. *Risques*, 101.
26. A.Charpentier Interprétation, intuition et probabilités. *Risques*, 99.
27. A.Charpentier De la difficulté de faire des prévisions (quand on a peu de données). *Risques*, 98.
28. B.Coulmont, A.Charpentier & J.Gombin (2014) Un homme, deux voix : le vote par procuration. *La Vie des Idées*, 11 février 2014.
29. A.Charpentier La loi des petits nombres. *Risques*, 97.
30. A.Charpentier L'efficacité des marchés : hypothèse de modèle ou fait stylisé?. *Risques*, 96.
31. A.Charpentier La loi des grands nombres et le théorème central limite comme base de l'assurabilité ? *Risques*, 86.

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## Chapters papers

1. A.Charpentier & E.Flachaire (2020) Pareto Models for Risk Management. in Recent Econometric Techniques for Macroeconomic and Financial Data, G. Dufrénot & T. Matsuki Ed. [arXiv:1912.11736](#)
2. A.Charpentier & M.Denuit (2019) On limits for machine learning algorithms in insurance. in Insurance data analytics, F.Planchet & C.Y.Robert Ed., 2020.
3. A.Charpentier (2020) Prédiction avec des copules en finance. in Prévisions en Finance, Charles, Darne & Ferrara Eds. [hal:01151233](#)
4. A.Charpentier (2018) Central Limit Theorem. in The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation, B. Frey Ed., 2018. [doi.org:10.4135/9781506326139.n105](#)
5. A.Charpentier & R.Kaas (2014) Introduction. in Computational Actuarial Science With R, Charpentier, A. Eds.
6. A.Charpentier & S.Tufféry (2014) Statistical Learning. in Computational Actuarial Science With R, Charpentier, A. Eds.
7. B.Escoto & A.Charpentier (2014) Bayesian Philosophy. in Computational Actuarial Science With R, Charpentier, A. Eds.
8. A.Charpentier (2014) Modèles statistiques du risque en assurance. in Statistique du Risque, Dreesbeke, Maumy-Bertrand, Saporta & Thomas-Agnan Eds. [pdf](#)
9. A.Charpentier (2014) Copules et Risques Multiples. in Statistique du Risque, Dreesbeke, Maumy-Bertrand, Saporta & Thomas-Agnan Eds. [pdf](#)
10. A.Charpentier (2014) Mesures de Risques. in Statistique du Risque, Dreesbeke, Maumy-Bertrand, Saporta & Thomas-Agnan Eds. [pdf](#)
11. A.Charpentier, J.D.Fermanian & O.Scaillet (2006) The estimation of copulas: Theory and practice. in Copula Methods in Derivatives and Risk Management: From Credit Risk to Market Risk, Rank Eds. [pdf](#)

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## Working Papers




1. A. Charpentier, L. Barry & M. James (2020) Insurance against Natural Catastrophes: Balancing Actuarial Fairness and Social Solidarity. Chaire Pari [pdf](#)
2. A. Charpentier, S. Mussard & T. Ouraga (2020) Principal Component Analysis: A Generalized Gini Approach. [arXiv:1910.10133](#)
3. O. Cabrignac, A. Charpentier & E. Gallic (2020) Modeling Joint Lives within Families. [arXiv:2006.08446](#)
4. A. Charpentier, R. Élie & C. Remlinger (2020) Reinforcement Learning in Economics and Finance. [arXiv:2003.10014](#)
5. A. Charpentier, A. Galichon & L. Vernet (2019) Optimal transport on large networks a practitioner guide. [arXiv:1907.02320](#)
6. A. Charpentier & Flachaire (2019) Pareto Models for Top Incomes. [hal:02145024](#) .

7. E. Belz & A. Charpentier (2019) Données Agrégées et Variables Compositionnelles : Note Méthodologique. [hal:2097031](https://hal.archives-ouvertes.fr/hal-02097031)
8. A. Charpentier & E. Flachaire (2019) Extended Scale-Free Networks. [arXiv:1905.10267](https://arxiv.org/abs/1905.10267)
9. D. Cocteau-Senn, A. Charpentier & R. Bigot (2018) La protection des données personnelles en assurance : dialogue du juriste avec l'actuaire 2018 [pdf](#)
10. A. Charpentier (2018) An introduction to multivariate and dynamic risk measures. [hal:01831481](https://hal.archives-ouvertes.fr/hal-01831481)
11. A. Barry , K. Oualkacha & A. Charpentier (2017) Weighted asymmetric least squares regression for longitudinal data using GEE. [arXiv:1810.09214](https://arxiv.org/abs/1810.09214)
12. A.D. Barry , A. Charpentier & K. Oualkacha Quantile and Expectile (2016) Regression for random effects model . [hal:01421752](https://hal.archives-ouvertes.fr/hal-01421752)
13. M.Boudreault & A.Charpentier (2011) Multivariate integer-valued autoregressive models applied to earthquake counts. [arXiv:1112.0929](https://arxiv.org/abs/1112.0929)
14. A.Charpentier (2010) Reinsurance, ruin and solvency issues: some pitfalls. [hal:00463381](https://hal.archives-ouvertes.fr/hal-00463381)
15. A.Charpentier, D.Causeur (2010) Large-scale significance testing of the full Moon effect on deliveries [hal:00482743](https://hal.archives-ouvertes.fr/hal-00482743)
16. A.Charpentier (2008) Pricing catastrophe options in incomplete markets . [citeseerx:10.1.1.572.4606](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.572.4606)

## Teaching

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### Selected courses

<b>Introduction to data science and artificial intelligence</b> 	INF7100 2020
<i>Université du Québec à Montréal, Canada</i>	
<b>Data Science for Actuaries</b> 	ACT6100 2020
<i>Université du Québec à Montréal, Canada</i>	
<b>Applied Linear Models</b> 	STT5100 2018,2019,2020
<i>Université du Québec à Montréal, Canada</i>	
<b>Regression</b>	MAT7381 2020
<i>Université du Québec à Montréal, Canada</i>	
<b>Non-life insurance mathematics</b>	2015, 2016, 2017
<i>ENSAE, Paris, France</i>	
<b>Time Series</b>	MAT8181 2014
<i>Université du Québec à Montréal, Canada</i>	
<b>Copulas and Extreme Values</b>	MAT8595 2014
<i>Université du Québec à Montréal, Canada</i>	



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## Summer schools

<b>Econometrics and Machine Learning</b> <i>Società Italiana di Econometria (SIDE), Italy</i>	2019
<b>Insurance Data Science: Use and Value of Unusual Data</b> <i>Summer School of the Swiss Association of Actuaries, Lausanne</i>	2019
<b>Econometrics and Machine Learning</b> <i>Università degli studi dell'Insubria, Italy</i>	2018
<b>Econometrics and Machine Learning</b> <i>Universitat de Barcelona, Spain</i>	2018

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## Other Institutions

<i>Đại học Kinh tế Thành phố Hồ Chí Minh</i>	Vietnam, 2008
<i>Institut de Statistique de l'Université de Paris (ISUP)</i>	France, 2008
<i>Institut de Mathématiques Appliqués, Angers</i>	France, 2007
<i>INSEA</i>	Marocco, 2006
<i>Université Saint-Joseph, Beyrut</i>	Lebanon, 2006
<i>ENSEA, Abidjan</i>	Ivory Coast, 2003

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## Professional training

<b>Data Science for Actuaries</b> <i>Institut des Actuaires</i>	Paris, France 2015-2018
<b>Data Science &amp; Machine Learning for Actuaries</b> <i>AXA Group</i>	Istanbul, Singapore & Paris 2015
<b>Machine Learning for Insurance</b> <i>MAIF Insurance</i>	Niort, France 2014
<b>Natural Catastrophes &amp; Cat Bonds</b> <i>AXA Group</i>	Paris, France 2007
<b>R for Actuarial Science</b> <i>AXA &amp; Caritat (professional training)</i>	Paris, France 2006-2007