Emma HUBERT

Curriculum Vitae

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Professional Experiences

Academic Research

Oct. 2020– **Postdoctoral Research Assistant**, *Department of Mathematics, Imperial College London*, United Kingdom.

Oct. 2017– Sept. 2020 **PhD in Applied Mathematics**, *LAMA, Université Gustave Eiffel (UGE)*, France.
Preparation of a PhD thesis on Contract Theory and Mean–Field Games (see [Hub20b]).
Under the supervision of Professor Romuald Elie (UGE, LAMA) & Professor Dylan Possamaï (Columbia University, IEOR).

Summer 2016 **Research Internship (2 months)**, *CEREMADE*, Paris–Dauphine University, France.
Study of an SIR model of epidemiology with vaccination, under the supervision of Professor Gabriel Turinici. Publication: [HT18].

Teaching and Responsability

Fall 2019 **Teaching Assistant**, *ENSAE ParisTech*, France.
Intermediate Microeconomics, 2nd year (M1), Pr Choné. Duration: 18h.

2019 Elected representative of the PhD students of the MSTIC PhD school for 2019.

Corporate Research

2017–2019 **Doctoral Consulting Mission**, *EDF R&D Department*, France.
Project as part of my PhD on the design of an insurance against fuel poverty. Preprint: [ACH20].

Spring 2017 **End–of–studies Internship (6 months)**, *EDF R&D Department*, France.
Equilibrium model for the electricity market, price formation and impact of financial actors.

Studies and Diplomas

2016–2017 **Master 2 MASEF**, *Paris–Dauphine University*, France.
Mathematics of Finance, Economics and Insurance, with distinction.

2015–2016 **Master 1 Applied Mathematics**, *Paris–Dauphine University*, France.
Advanced Mathematics Courses, with distinction.

2012–2015 **Licence MEFA**, *Paris–Dauphine University*, France.
Mathematics, Economics, Finance and Actuarial Sciences, with distinction.

2012 **Scientific Baccalaureat**, *Condorcet High School in Paris*, France.
Mathematics Speciality, with distinction.

Publications & Preprint

[ACH20] Clémence Alasseur, Corinne Chaton, and Emma Hubert. Optimal insurance contract with benefits in kind under adverse selection. *Preprint arXiv:2001.02099*, 2020.

[ÉHMP19] Romuald Élie, Emma Hubert, Thibaut Mastrolia, and Dylan Possamaï. Mean–field moral hazard for optimal energy demand response management. *Mathematical Finance*, to appear, 2019.

[ÉHT20] Romuald Élie, Emma Hubert, and Gabriel Turinici. Contact rate epidemic control of COVID–19: an equilibrium view. *Mathematical Modelling of Natural Phenomena*, 15(35):1–25, 2020.

[HMPW20] Emma Hubert, Thibaut Mastrolia, Dylan Possamaï, and Xavier Warin. Incentives, lockdown, and testing: from Thucydides's analysis to the COVID–19 pandemic. *Preprint arXiv:2009.00484*, 2020.

[HT18] Emma Hubert and Gabriel Turinici. Nash–MFG equilibrium in a SIR model with time dependent newborn vaccination. *Ricerche di matematica*, 67(1):227–246, 2018.

[Hub20a] Emma Hubert. Continuous–time incentives in hierarchies. *Preprint arXiv:2007.10758*, 2020.

[Hub20b] Emma Hubert. *Interactions and incentives: between contract theory and mean–field games*. PhD thesis, Université Gustave Eiffel, 2020.

Conferences & Research visits

Invited talks in international conferences

Feb. 2020 **Berkeley–Columbia Meeting in Engineering and Statistics**, Berkeley, USA.
Hierarchical Principal–Agent problems in continuous–time, based on [HMPW20].

June 2019 **3rd International Conference on Actuarial Science and Quantitative Finance**, Manizales, Colombia.
Optimal remuneration of correlated consumers in electricity demand, based on [ÉHMP19].

Oct. 2018 **International Conference on Control, Games and Stochastic Analysis**, *Hammamet, Tunisia*.
Optimal remuneration of correlated consumers in electricity demand, based on [ÉHMP19].

Invited talks in Seminars

June 2020 **Working group on Mean Field Games**, Paris, France.
Contact rate epidemic control of COVID-19: an equilibrium view, based on [ÉHT20].

May 2020 **Webseminar CMAP, Ecole Polytechnique**, Palaiseau, France.
Continuous–time incentives in hierarchies, based on [HMPW20].

Mars 2020 **Webseminar Paris School of Economics (PSE)**, Paris, France.
Optimal insurance contract with benefits in kind under adverse selection, based on [ACH20].

Dec. 2019 **FIME research seminar**, Paris, France.
Optimal insurance contract with benefits in kind under adverse selection, based on [ACH20].

Contributed talks in international conferences

Jan. 2020 **14th Bachelier Colloquium on Mathematical Finance and Stochastic Calculus**, Métabief, France.
Hierarchical Principal–Agent problems in continuous–time.

Sept. 2019 **12th European Summer School in Financial Mathematics**, Padova, Italia.
Hierarchical Principal–Agent problems in continuous–time.

Jun. 2019 **SIAM Conference on Financial Mathematics & Engineering**, Toronto, Canada.
Optimal remuneration of correlated consumers in electricity demand, based on [ÉHMP19].

Jan. 2019 **13th Bachelier Colloquium on Mathematical Finance and Stochastic Calculus**, Métabief, France.
Optimal remuneration of correlated consumers in electricity demand, based on [ÉHMP19].

Contributed talks in seminars

June 2020 **PhD Day Mathematics & Finance at Imperial College**, London, United Kingdom.
Between interactions and incentives: some works around Contract Theory, based on [Hub20b].

Research Visits

Feb. 2020 **Pr. Romuald Elie (2 weeks)**, *Department of IEOR*, University of California, Berkeley, USA.

Jul. 2019 **Dr. Chao Zhou (1 week)**, *Department of Mathematics*, NUS – National University of Singapore, Singapore.

Apr. 2019 **Dr. Nicolas Hernández Santibánez (1 week)**, *Department of Mathematics*, University of Michigan, Ann Arbor, USA.

2018–2019 **Dr. Adrien Nguyen–Huu (3 weeks)**, *Economics Faculty*, University of Montpellier, Montpellier, France.
May 2018, December 2018 and March 2019.

2018–2019 **Pr. Dylan Possamaï (2 months and a half)**, *IEOR Department*, Columbia University, New York, USA.
May 2018, November 2018 and March to May 2019.