

# VALENTIN TISSOT-DAGUETTE

PhD Candidate at Princeton University and Bloomberg PhD Fellow

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## EDUCATION

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|--------------------------------|--|
| 2023 - 2024                    | <b>University of Southern California</b> , Los Angeles, CA, USA<br><i>Visiting PhD Student</i> . Mentor: Prof. Jianfeng Zhang<br>Topics: Occupied Processes, Fully nonlinear parabolic PDEs, Viscosity solutions   |
| 2020 - June 2024<br>(expected) | <b>Princeton University</b> , Princeton, NJ, USA<br><i>PhD in Operations Research and Financial Engineering</i><br>Adviser: Prof. H. Mete Soner. Industry Mentor: Dr. Bruno Dupire<br>Topics: Optimal stopping, Free boundary problems, Deep Stochastic Optimization, Functional Expansions, Path-dependent claims |
| 2018 - 2020                    | <b>EPFL</b> , Lausanne, Switzerland<br><i>MSc in Financial Engineering</i> . GPA: 5.84/6.00<br>Coursework: Computational finance, Financial derivatives, Numerical integration of SDEs   |
| 2016 - 2017                    | <b>ETH Zurich</b> , Zurich, Switzerland<br><i>BSc in Mathematics</i> . Exchange year. GPA: 5.80/6.00<br>Coursework: Probability theory, Stochastic calculus, Randomized algorithms   |
| 2014 - 2016<br>2008 - 2014     | <b>EPFL</b> , Lausanne, Switzerland<br><i>BSc in Mathematics</i> . First and second year<br><i>Euler Course of Mathematics</i> . Selective program of mathematics for high-potential students  |

## EXPERIENCE

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| Summer 2021 - 2023<br>Dec 2021 - May 2022 | <b>Bloomberg LP</b> , New York City, NY, USA<br><i>Quantitative Researcher (Intern)</i><br><i>Quantitative Researcher (Consultant)</i><br>Mentor: Dr. Bruno Dupire, Head of Quantitative Research<br>Topics: Functional Taylor Series, Path signature, Karhunen-Loève expansion |
| Feb - Aug 2020                            | <b>Lombard Odier Investment Managers</b> , London, UK<br><i>Quantitative Research Intern (Master's thesis in industry)</i><br>Mentors: Prof. Damir Filipović and Dr. Serge Tabachnik<br>Topics: Implied volatility indices, Variance swap, Volatility targeting                 |
| May - Nov 2019                            | <b>Swiss Finance Institute @ EPFL</b> , Lausanne, Switzerland<br><i>Research Assistant of Dr. Kathrin Glau</i><br>Topics: American option pricing, Reproducing kernel Hilbert spaces, Chebyshev interpolation   |

## AWARDS

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|-------------|---|
| 2022 - 2023 | <b>Bloomberg Quantitative Finance PhD Fellowship</b><br>One of three recipients. Grant of \$100,410 (tuition, stipend, conference funding)          |
| Oct 2020    | <b>2020 Swiss Life Award for Academic Excellence</b><br>Award for the highest GPA in the Master in Financial Engineering program of 2018-2020, EPFL |
| Dec 2015    | <b>First Prize on the 2015 Combinatorial Problem Solving Contest</b><br>Awarded by Prof. János Pach, EPFL   |

## PUBLICATIONS

|      |   |
|------|---|
| 2022 | [1] A.M. Reppen, H.M. Soner, and V. T.-D. <b>Deep Stochastic Optimization in Finance</b> . Digital Finance, (2022). <a href="#">Link</a>                                |
|      | [2] V. T.-D. <b>Projection of Functionals and Fast Pricing of Exotic Options</b> . SIAM Journal on Financial Mathematics, 13(2):SC74–SC86, (2022). <a href="#">Link</a> |

## PREPRINTS

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|------|--|
| 2023 | [3] V. T.-D. <b>Occupied Processes: Going with the Flow</b> . <a href="#">arXiv:2311.07936</a> , (2023)  |
|      | [4] M. Shkolnikov, H. Mete Soner, and V. T.-D. <b>Deep Level-set Method for Stefan Problems</b> . <a href="#">arXiv:2306.11601</a> , (2023). In review |
|      | [5] H.M. Soner, and V. T.-D. <b>Stopping Times of Boundaries: Relaxation and Continuity</b> . <a href="#">arXiv:2305.09766</a> , (2023). In review     |
| 2022 | [6] B. Dupire and V. T.-D. <b>Functional Expansions</b> . <a href="#">arXiv:2212.13628</a> , (2022). In review   |
|      | [7] A.M. Reppen, H.M. Soner, and V. T.-D. <b>Neural Optimal Stopping Boundary</b> . <a href="#">arXiv:2205.04595</a> , (2022). In review               |

## SELECTED TALKS

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| October 2023   | <b>Financial and Actuarial Mathematics Seminar</b> , UCLA, CA, USA<br><i>Breaking down the Functionals: Taylor Expansion and Partitions of Unity</i>  |
| September 2023 | <b>Math Finance Colloquium</b> , University of Southern California, CA, USA<br><i>Stopping Spot Local Time: A Random Occupation</i><br><b>Advances in Stochastic Analysis for Handling Risks in Finance and Insurance</b> , CIRM, France<br><i>Options Stopping times of boundaries: relaxation, continuity, and neural approximation</i>         |
| June 2023      | <b>SIAM Conference on Financial Mathematics and Engineering</b> , Philadelphia, PA, USA<br><i>Projection of Functionals and Fast Pricing of Exotic Options</i>  |
| Apr 2023       | <b>ORFE Graduate Students Fin Math Seminar</b> , Princeton University, NJ, USA<br><i>Deep Level-set Method for Stefan Problems</i><br><b>Princeton Fintech &amp; Quant Conference Spring 2023</b> , Princeton University, NJ, USA<br><i>Path Dependence in Finance: Theory and Computations</i>   |
| Mar 2023       | <b>Seminar on Stochastic Processes</b> , University of Arizona, AZ, USA<br><i>Functional Taylor Expansion and Wiener Chaos</i>  |
| Feb 2023       | <b>Rough Path Interest Group Seminar</b> , DataSig (online)<br><i>Functional Expansions, Signature, and Claim Decomposition</i>   |
| Oct 2022       | <b>Talks in Financial and Insurance Mathematics</b> , ETH Zurich, Switzerland<br><i>Functional Expansions, Signature, and Claim Decomposition</i><br><b>Oxford-Princeton Workshop on Stochastic Analysis and Mathematical Finance</b> , University of Oxford, UK<br><i>Neural Optimal Stopping Boundary</i>                                       |
| Sep 2022       | <b>2022 CFMAR Workshop</b> , UC Santa Barbara, CA, USA<br><i>Neural Optimal Stopping Boundary</i>   |
| Aug 2022       | <b>Research in Options: RiO 2022</b> , FGV, Rio de Janeiro, Brazil<br><i>Projection of Functionals and Fast Pricing of Exotic Options</i> (contributed talk)<br><i>Functional Expansions and Claim Decomposition</i> (plenary talk)<br><b>FMI Tech Econophysics Webinar</b><br><i>Path Approximation using Signatures and Hilbert Projections</i> |
| Sept 2021      | <b>Bloomberg Quant (BBQ) Seminar</b> (online)<br><i>Demystifying the Path Signature</i> (lightning talk)  |

## TEACHING

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|-------------|--|
|             | <b>Princeton University</b> , Princeton, NJ, USA       |
|             | <i>Head Assistant in Instruction</i>                   |
| Spring 2023 | ORF 335/ECO 364: Introduction to Financial Mathematics |
|             | <i>Assistant in Instruction</i>                        |
| Fall 2022   | ORF 535/FIN 535: Financial Risk and Wealth Management  |
| Spring 2022 | ORF 335/ECO 364: Introduction to Financial Mathematics |
| Fall 2021   | ORF 418: Optimal Learning                              |
|             | <b>EPFL</b> , Lausanne, Switzerland                    |
|             | <i>Assistant in Instruction</i>                        |
| Fall 2019   | FIN 472: Computational Finance                         |
| 2012 - 2016 | Euler Course: Calculus, Geometry, Algebra              |

## ACTIVITIES

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|---------------------|---|
| 2021 - Present      | <b>Referee for Academic Journals and Books</b>                                  |
|                     | - SIAM Journal on Financial Mathematics   |
|                     | - Chapman and Hall/CRC  |
|                     | - Journal of Computational Finance  |
| Fall 2021 - Present | <b>Organizer:</b> ORFE Graduate Students Fin Math Seminar, Princeton University |

## SKILLS AND INTERESTS

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| Language    | French (native), English (proficient), German (intermediate), Portuguese (beginner) |
| Programming | Python, Julia, Matlab, C++  |
| Interests   | Percussions, Music composition, Seido Karate, Pescetarian cuisine                   |