# Pierrick Bousseau

## *Curriculum Vitae*

---

## Personal Information

Address: Athens GA, University of Georgia, Department of Mathematics
E-mail: Pierrick.Bousseau@uga.edu

## Employment

08.2022–present **Assistant Professor**, *University of Georgia, US*
01.2022–07.2022 **Assistant Professor**, *ETH Zürich*
09.2020–12.2021 **Chargé de recherche**, *CNRS*, Laboratoire de Mathématiques d'Orsay, Université Paris-Sud (on leave since 01.2022)
09.2018–08.2020 **Junior fellow (postdoc)**, *ETH Zürich, Institute for Theoretical Studies*

## Education

2014 – 2018 **PhD in Mathematics**, *Imperial College London*
Supervisor: Richard Thomas
2013 – 2014 **ENS Diploma**, *École Normale Supérieure de Paris*
Major in Mathematics, Minor in Physics
2011 – 2013 **MSc in Mathematics**, *École Normale Supérieure de Paris, Paris 11*
With highest distinction
2010 – 2011 **BSc in Physics**, *École Normale Supérieure de Paris, Paris 11*
With highest distinction
2010 – 2011 **BSc in Mathematics**, *École Normale Supérieure de Paris, Paris 11*
With highest distinction
2008 – 2010 **MPSI-MP\***, *Lycée Louis le Grand, Paris*
Preparatory classes for the Grandes Ecoles, Mathematics, Physics, Computer Science
2008 **French Baccalauréat**
High school qualification, with highest distinction

## Grants and honors

**2023-2026** **National Science Foundation Grant**, *Dualities in Enumerative Algebraic Geometry*, award number: 2302117, $251,418.

**2022-2027** **European Union ERC starting grant**, *grant number: 101039837*
This award (1.4 Million Euros) was to pay for 2 PhD students, 3 postdocs for a period of 5 years. These grants are highly competitive, with roughly 12 awards per year in mathematics across Europe. (I declined this award when moving to the US.)

**2021-2022** **Laureate of the Peccot Lecture**
Distinction each year given to one French mathematician under 30 years old for their promising work Cours Peccot 2021-2022 du Collège de France.

**2020** **SwissMAP Innovator Prize**
Awarded to PhD students or postdocs for important scientific achievements in the research areas of the Swiss National Centre of Competence in Research SwissMAP-The Mathematics of Physics

**2019** **Yael Naim Dowker Centenary Prize in Mathematics**
Awarded by Imperial College, London to graduate students with an outstanding PhD thesis.

**2018** **Doris Chen PhD Merit Award**
Awarded by Imperial College, London to graduate students for their outstanding achievements.

**2017** **Young Scientist Award of the Journal of Geometry and Physics**
For a presentation at the Workshop on Algebraic Geometry and Physics, SISSA.

**2014** **PhD Scholarship from Imperial College London**

**2010** **Admission to the École Normale Supérieure de Paris (ENS)**

**2009** **Silver Medal**
International Physics Olympiads (IPHO)

**2008** **1'st Prize winner at Concours général de Physique**
French national competition in Physics

## Papers

**2023** *All-genus WDVV recursion, quivers, and BPS invariants*, joint with Longting Wu, 35 pages, arXiv:2303.00503, submitted.

**2023** *Quivers, Flow Trees, and Log Curves*, joint with Hülya Argüz, 61 pages, arXiv:2302.02068, submitted.

**2022** *Holomorphic Floer theory and Donaldson-Thomas invariants*, 38 pages, arXiv:2210.17001, submitted.

**2022** *BPS Dendroscopy on Local P2*, joint with Pierre Descombes, Bruno Le Floch, and Boris Pioline, 75 pages, arXiv:2210.10712, submitted.

**2022** *Fock-Goncharov dual cluster varieties and Gross-Siebert mirrors*, joint with Hülya Argüz, 54 pages, arXiv:2206.10584, submitted.

**2021** *Gromov–Witten invariants of complete intersections*, joint with Hülya Argüz, Rahul Pandharipande, and Dimitri Zvonkine, 90 pages, arXiv:2109.13323, to appear in the **Journal of Topology**.

| 2021 | *The flow tree formula for Donaldson-Thomas invariants of quivers with potentials*, joint with Hülya Argüz, arXiv:2102.11200, **Compositio Mathematica**, 158(12), 2206-2249, 2022. |
|---|---|
| 2020 | *Stable maps to Looijenga pairs*, joint with Andrea Brini and Michel van Garrel, 114 pages, arXiv:2011.08830, to appear in **Geometry and Topology**. |
| 2020 | *Stable maps to Looijenga pairs: orbifold examples*, joint with Andrea Brini and Michel van Garrel, arXiv:2012.10353, **Letters in Mathematical Physics**, 111(4), 1-37, 2021. |
| 2020 | *Strong positivity for the skein algebras of the 4-punctured sphere and of the 1-punctured torus*, 59 pages, arXiv:2009.02266, **Communications in Mathematical Physics**, 1-58, 2022. |
| 2020 | *Real Log Curves in Toric Varieties, Tropical Curves, and Log Welschinger Invariants*, joint with Hülya Argüz, arXiv:2004.05124, **Annales de l'Institut Fourier**, 72(4), 1547-1620, 2022. |
| 2020 | *Scattering diagrams, sheaves and curves*, arXiv:2002.08741, **Acta Mathematica Sinica, English Series,** 37(7), 1005–1022, 2021. |
| 2020 | *Holomorphic anomaly equation for $(P^2, E)$ and the Nekrasov-Shatashvili limit of local $P^2$*, joint with Honglu Fan, Shuai Guo, and Longting Wu, arXiv:2001.05347, **Forum of Mathematics, Pi**, 9, E3. doi:10.1017/fmp.2021.3, 2021. |
| 2019 | *A proof of N.Takahashi's conjecture for $(P^2, E)$ and a refined sheaves/Gromov–Witten correspondence*, 48 pages, arXiv:1909.02992, to appear in **Duke Mathematical Journal**. |
| 2019 | *Scattering diagrams, stability conditions, and coherent sheaves on $P^2$*, arXiv:1909.02985, **Journal of Algebraic Geometry**, 31(4), 593-686, 2022. |
| 2019 | *On the log-local principle for the toric boundary*, joint with Andrea Brini and Michel van Garrel, arXiv:1908.04371, **Bulletin of the London Mathematical Society**, 54(1), 161-181, 2022. |
| 2019 | *Refined floor diagrams from higher genera and lambda classes*, arXiv:1904.10311, **Selecta Mathematica**, 27(3), 1-42, 2021. |
| 2018 | *On an example of quiver Donaldson-Thomas/relative Gromov-Witten correspondence*, arXiv:1811.02448, **International Mathematics Research Notices**, 2021(15), 11845-11888, 2021. |
| 2018 | *Quantum mirrors of log Calabi-Yau surfaces and higher genus curves counting*, arXiv:1808.07336, **Compositio Mathematica**, 156(2), 360-411, 2020. |
| 2018 | *The quantum tropical vertex*, arXiv:1806.11495, **Geometry and Topology**, 24(3) 1297-1379, 2020. |
| 2017 | *Refined tropical curve counting from higher genera and lambda classes*, arXiv:1706.07762, **Inventiones Mathematicae**, 215(1), 1-79, 2019. |

## Invited Talks at International Conferences

| 2023 | **Homological Mirror Symmetry**, *DT Invariants and Holomorphic Curves*, 25 January, Miami, US. |
|---|---|

2022 **Algebraic Geometry and Complex Geometry**, *DT invariants of the local projective plane (Minicourse, 3 lectures)*, 28 November- 2 December, CIRM, Luminy, France.

2022 **Kansas Geometry Day 2022**, *Fock-Goncharov dual cluster varieties and Gross-Siebert mirrors*, 12 November, Kansas University, US.

2022 **MSRI Workshop: New four-dimensional gauge theories**, *Holomorphic Floer theory and Donaldson-Thomas invariants*, 24 October, Berkeley, US.

2022 **Conference Mirror symmetry for Looijenga interiors and beyond**, *Fock-Goncharov dual cluster varieties and Gross-Siebert mirrors*, 29 July 2022, online talk, Istanbul, Turkey.

2022 **String Math 2022**, *Holomorphic Floer theory and DT invariants*, 12 July 2022, University of Warsaw, Poland.

2022 **Workshop on geometric representation theory**, *Cluster varieties and mirror symmetry*, 22 June 2022, University of Paris, France.

2022 **Workshop on Quantum Geometry**, *Gromov–Witten theory of complete intersections*, 2 talks, 26-27 April 2022, IHES, France.

2022 **Workshop on Quivers, Calabi-Yau threefolds and DT Invariants**, *D-branes on local $P^2$ revisited*, 12 April 2022, Jussieu, Paris, France.

2022 **Recent Advances on Moduli Spaces of Curves**, *Gromov–Witten theory of complete intersections*, 21 March 2022, Leysin, Switzerland.

2021 **Workshop in honour of Lothar Göttsche's 60th birthday**, *The flow tree formula for DT invariants of quivers with potentials*, 14 December 2021, online.

2021 **IHES Summer School on Enumerative Geometry, Physics and Representation Theory**, *The skein algebra of the 4-punctured curve from curve counting*, 5 July 2021, Paris, France.

2021 **Conference on BPS states, mirror symmetry, and exact WKB**, *The flow tree formula for DT invariants of quivers with potentials*, 2 lectures on 30 June and 1 July 2021, Sheffield, UK.

2021 **Summer school of the ANR "Symplectic, real, and tropical aspects of enumerative geometry**, *Aspects of refined enumerative geometry*, 5 hours lecture series, 14-17 June 2021, Le Croisic, France.

2021 **Swiss Map site visit conference**, *The flow tree formula for quivers with potentials*, 25 May 2021, online organised by Swiss Map, Switzerland.

2020 **FRG Workshop on Moduli Spaces and Stability**, *A scattering diagram for coherent sheaves on the projective plane*, 7 December 2020, online hosted by University of Illinois Chicago, US.

2020 **Simon's Collaboration Conference on Floer-theoretic and algebro-geometric aspects of SYZ mirror symmetry**, *Skein algebras from higher genus mirror symmetry*, 1 October 2020, online organised by the Simon's Collaboration on Homological Mirror Symmetry, US.

2020 **7th annual SwissMAP General Meeting**, *Strong positivity for the skein algebras of the $4$-punctured sphere and of the $1$-punctured torus*, 7 September 2020, online organised by Swiss Map, Switzerland.

2020 **Hausdorff School on Perverse Sheaves in Enumerative Geometry**, *Quasimodular forms from Betti numbers*, 10 February 2020, Hausdorff Center for Mathematics, Bonn, Germany.

2020 **Lecture series at Kyoto University**, *The Tropical Vertex, 5 hours lectures*, February 2020, Kyoto University, Japan.

2020 **5th KTGU Workshop**, *Quasimodular forms from Betti numbers*, 7 February 2020, Kyoto University, Japan.

2020 **Rencontres en géométrie énumérative et réelle**, *Quasimodular forms from Betti numbers*, 21 January 2020, Université de Nantes, France.

2019 **Beijing-Zurich Moduli Workshop**, *Scattering diagrams, sheaves on $P^2$ and curves in $P^2$ relative to a smooth cubic*, 9-12 September 2019, 3 hours lecture series at BICMR, Beijing, China.

2019 **Workshop on Mirror symmetry and cluster algebras**, *Towards DAHA from tropical geometry*, 15 July 2019, Cambridge, UK.

2019 **Oberwolfach Workshop on Logarithmic Enumerative Geometry and Mirror Symmetry**, *A proof of a conjecture of N. Takahashi*, 17 June 2019, Oberwolfach, Germany.

2019 **Summer School on New Perspectives in Gromov-Witten Theory**, *A proof of Takahashi's conjecture*, 4 June 2019, Sorbonne Université, Paris, France.

2019 **Oberwolfach Workshop on Tropical Geometry: new directions**, *Tropical geometry and coherent sheaves on the projective plane*, 3 May 2019, Oberwolfach, Germany.

2019 **Conference on Moduli in Budapest**, *On the Betti numbers of moduli spaces of semistable sheaves on the projective plane*, 4 April 2019, Budapest, Hungary.

2019 **Conference on Mirror symmetry and related topics**, *Higher genus wall-crossing and quantization*, 28 January-2 February 2019, Miami, US.

2018 **Tropical geometry in Europe**, *Quantum mirrors of log Calabi-Yau surfaces and higher genus curve counting*, 21-23 November 2018, Nantes, France.

2018 **Workshop on Geometry and Mathematical Physics**, *The quantum tropical vertex*, 09 July 2018, Warwick University, UK.

2018 **MSRI Workshop on Structures in Enumerative Geometry**, *Quantum mirrors of log Calabi-Yau surfaces and higher genus curves counting*, 22 March 2018, Berkeley, US.

2017 **Conference on Open Gromov-Witten theory, integrable hierarchies and mirror symmetry**, *Quantum mirrors of log Calabi-Yau surfaces and higher genus curves counting*, 17-20 October 2017, ETH, Zurich, Switzerland.

2017 **Modern Moduli Theory Graduate School**, *DT invariants from holomorphic curves and a geometric interpretation of Block-Göttsche invariants*, 20 September 2017, ETH, Oxford, UK.

2017 **Workshop on Algebraic Geometry and Physics**, *DT invariants from holomorphic curves and a geometric interpretation of Block-Göttsche invariants*, 20 June 2017, SISSA, Trieste, Italy.

2016 **Workshop on Curves on surfaces and 3-folds**, *Around the GW/Kronecker correspondence*, 21 June 2016, EPFL, Lausanne, Switzerland.

2014 **ERC - FIRB workshop Mirror symmetry, Enumerative Geometry and Related Topics**, 27 May 2014, Pavia, Italy.

## Invited Talks at Research Seminars

2023 **Symplectic zoominar**, *14 April 2023, online.*

2023 **M Seminar, Kansas State University**, *13 April 2023, online.*

2023 **Berkeley Informal String-Math Seminar**, *3 March 2023, Berkeley.*

2023 **Séminaire d'Algèbre et Géométrie du Labotatoire Mathématique de Versailles**, *21 March 2023, online.*

2023 **Iowa Geometry and Topology seminar**, *16 February 2023, online.*

2022 **Stanford Algebraic Geometry seminar**, *18 November 2022, online.*

2022 **Geometry seminar**, *14 October 2022, University of Georgia.*

2022 **Geometry, Symmetry and Physics seminar**, *3 October 2022, Yale University.*

2022 **Nottingham Online Algebraic Geometry Seminar**, *22 July 2022, online, hosted by Nottingham University.*

2021 **Séminaire Darboux**, *9 December 2021, LPTHE, Jussieu, Paris.*

2021 **Algebraic geometry and number theory seminar**, *25 November 2021, online, hosted by the Institute of Science and Technology Austria (IST Austria).*

2021 **ETH Algebraic Geometry and Moduli Seminar**, *17 November 2021, online, hosted by ETH Zürich.*

2021 **Algebraic Geometry in String Theory seminar**, *16 November 2021, online, hosted by Harvard CMSA.*

2021 **EPFL seminar**, *11 November 2021, EPFL, Lausanne.*

2021 **Seminar in Real and Complex Geometry**, *4 November 2021, online, hosted by Tel-Aviv University.*

2021 **Séminaire d'algèbre**, *7 June 2021, online, hosted by IMJ-PRG, Paris.*

2021 **KIAS Weekly Geometry Seminar**, *27 May 2021, online, hosted by KIAS, Seoul.*

2021 **Joint Harvard-CUHK-YMSC Differential Geometry Seminar**, *6 April 2021, online.*

2021 **Geometry, Symmetry and Physics seminar**, *23 February 2021, online, hosted by Yale University.*

2021 **Colloquium of the ZMP, Hamburg**, *18 February 2021, online, hosted by the University of Hamburg.*

2021 **Séminaire Géométrie algébrique**, *2 February 2021, Laboratoire de Mathématiques de Versailles.*

2021 **Derived algebraic geometry seminar**, *13 January 2021, online.*

2020 **Boston University Geometry and Physics Seminar**, *3 December 2020, online.*

2020 **Séminaire d'Analyse et Géométrie**, *17 November 2020, online.*

2020 **Northwestern Geometry and Physics Seminar**, *13 November 2020, online.*

2020 **Berkeley Informal String Math Seminar**, *3 November 2020, online.*

2020 **Greater Washington Topology Seminar**, *23 October 2020, online.*

2020 **Séminaire Arithmétique et Géométrie Algébrique**, *6 October 2020, Université Paris-Saclay.*

2020 **UBC Algebraic Geometry Seminar**, *2 October 2020, online.*

2020 **ETH Algebraic Geometry and Moduli Seminar**, *25 September 2020, online.*

2020 **Working group on scattering diagrams**, *18 June 2020, online.*

2020 **ETH Zoominar**, *3 June 2020, online.*

2020 **University of California San Diego Algebraic Geometry Seminar**, *15 May 2020, online.*

2020 **EDGE Algebraic Geometry Seminar**, *12 May 2020, online.*

2020 **Trieste Algebraic Geometry Seminar**, *6 May 2020, online.*

2020 **Seminar of Physical Mathematics**, *13 January 2020, Heidelberg University.*

2019 **Séminaire Fables Géométriques**, *4 November 2019, Geneva University.*

2019 **ETH Algebraic Geometry and Moduli Seminar**, *30 October 2019.*

2019 **Algebraic Geometry Seminar**, *22 October 2019, Warwick University.*

2019 **Algebraic Geometry Seminar**, *17 October 2019, Sheffield University.*

2019 **Séminaire de Géométrie Algébrique**, *14 June 2019, Université d'Angers.*

2019 **ETH Algebraic Geometry and Moduli Seminar**, *29 Mai 2019, ETH Zürich.*

2019 **London Geometry and Topology Seminar**, *10 Mai 2019, Imperial College London.*

2019 **Algebraic Geometry Seminar**, *7 Mai 2019, Imperial College London.*

2019 **Berkeley Algebraic Geometry Seminar**, *19 April 2019, University of Berkeley.*

2019 **Algebraic Geometry Seminar**, *11 April 2019, University of Texas at Austin.*

2019 **Séminaire de Géométrie Énumérative**, *8 February 2019, Sorbonne Université, Jussieu.*

2018 **Séminaire Arithmétique et Géométrie Algébrique**, *11 December 2018, Orsay.*

2018 **Topology and Geometry Seminar**, *4 December 2018, Hebrew University, Jerusalem.*

2018 **Algebraic Geometry and Moduli Seminar**, *5 October 2018, ETH Zurich.*

2018 **KCL/UCL Geometry Seminar**, *7 February 2018, University College London.*

2017    **Algebraic Geometry Seminar**, *22 November 2017, University of Hamburg.*
2017    **Algebraic Geometry Seminar**, *31 October 2017, Warwick University.*
2017    **Algebraic Geometry Seminar**, *24 October 2017, Sheffield University.*
2017    **Séminaire de géométrie tropicale**, *11 October 2017, Jussieu, Paris.*
2017    **Séminaire d'Analyse et Géométrie**, *10 October 2017, Jussieu, Paris.*
2017    **The London Geometry and Topology Seminar**, *16 June 2017, London.*
2017    **ETH Algebraic Geometry and Moduli Seminar**, *3 March 2017, Zürich.*
2016    **Cambridge Algebraic Geometry Seminar**, *19 October 2016, Cambridge.*
2016    **KIAS Algebraic Geometry Seminar**, *2 March 2016, Seoul.*

## Teaching

2023 Spring    Instructor, Math 2700 Elementary Differential Equations, University of Georgia.
2022 Fall    Instructor, Math 2250 Calculus 1, University of Georgia.
2022    Instructor, Intersection theory in algebraic geometry (Master-PhD level), ETH Zurich.
2019    Instructor, Short course on tropical geometry, log geometry, and applications to Gromov-Witten theory (5 hours, PhD level), ETH Zurich.
2018    Teaching assistant, M2PM5: Metric spaces and topology, Imperial College London.
2018    Teaching assistant, M2AA1: Differential equations, Imperial College London.
2017    Teaching assistant, M2AA2: Multivariable Calculus, Imperial College London.
2017    Teaching assistant, M2PM2: Algebra II, Imperial College London.
2017    Teaching assistant, M2AA1: Differential equations, Imperial College London.
2016    Teaching assistant, M3P14: Elementary Number Theory, Imperial College London.
2016    Teaching assistant, M2PM2: Algebra 2, Imperial College London.
2016    Teaching assistant, M2PM1: Real Analysis, Imperial College London.
2016    Teaching assistant, M2PM3: Complex Analysis, Imperial College London.
2016    Teaching assistant, M1F: Foundations of Analysis, Imperial College London.

## Supervision

**PhD students:**
2022–current    Sayan Chattopadhyay, University of Georgia.
**MSc students:**
2022    Jöran Schlömer. Thesis title: Homological mirror symmetry for log Calabi-Yau surfaces and associated quivers, ETH Zurich.
2020    Felix Thimm. Thesis title: Hilbert schemes of Points on 3-folds, ETH Zurich.
**Postdocs:**
2022–current    Soumya Sinha Babu, University of Georgia.

## Conference organization

2023  Co-organizer of the Georgia Algebraic Geometry Symposium 2023, April 28-30, University of Georgia

2017  Co-organizer of the British Isle Workshop, "Higgs bundles: algebraic and differential geometric perspectives", 2nd - 8th April 2017, Isle of Wight

## Service

2020-present  Reviewer for AMS Mathematical Reviews

2023  Refereeing for Journal of the European Mathematical Society.

2022  Refereeing for Selecta Mathematica, Inventiones Mathematicae, Journal of Differential Geometry, Forum of Math Sigma, Letters in Mathematical Physics, Transactions of the AMS, and Advances in Mathematics.

2021  Refereeing for the Journal of Algebra, Compositio Mathematica, Inventiones Mathematicae, Journal of Algebraic Geometry, Geometry and Topology, and Letters in Mathematical Physics.

2020  Refereeing for International Mathematics Research Notices, Selecta Mathematica, Journal de l'École polytechnique and the Journal of the London Mathematical Society.

2019  Refereeing for Transactions of the American Mathematical Society, International Mathematics Research Notices and Proceedings of the American Mathematical Society.

2018  Refereeing for Le Journal de l'Institut de Mathématiques de Jussieu and International Mathematics Research Notices.