
ADRIEN BLANCHET
Curriculum Vitæ

1. SHORT VITÆ

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| BLANCHET Adrien | Born 22 November 1977 (45 years old) Maître de conférences HDR Toulouse School of Economics & Institute for Advanced Study in Toulouse Esplanade de l'Université, 31080 Toulouse Cedex 06, France 33 (0)5.61.12.85.83 Adrien.Blanchet@tse-fr.eu http://www.tse-fr.eu/people/adrien-blanchet |
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- 2012 Habilitation à diriger des recherches (Toulouse Capitole University)
Variationnal methods applied to biology and economics
Jury H. Berestycki, A. Bertozzi (referee), Y. Brenier (referee), P. Degond, J. Dolbeault, M. Le Breton, P. Markowich (referee), C. Sire.
- 2005 PhD in Sciences (Paris-Dauphine University)
Monotonicity formulas applied to free boundary problems and biology
Jury H. Berestycki, J. Dolbeault (advisor), R. Monneau (advisor), H. Shahgholian (referee), H. Zaag (referee), J. Carrillo.

2. SCIENTIFIC ACTIVITIES

2.1. **Publications.** All my publications can be downloaded on <http://www.tse-fr.eu/people/adrien-blanchet>.
Bibliometry : 32 articles, 2399 citations, h-index = 21 (source: Google Scholar).

- (1) "Collective Information Processing in Human Phase Separation",
B. JAYLES, R. ESCOBEDO, R. PASQUA, C. ZANON, A. BLANCHET, M. ROY, G. TREDAN, G. THÉRAULAZ & C. SIRE,
Philosophical Transactions of the Royal Society B: Biological Sciences, 375 n°1807, September 2020.
- (2) "The impact of incorrect social information on collective wisdom in human groups",
B. JAYLES, R. ESCOBEDO, S. CEZERA, A. BLANCHET, T. KAMEDA, C. SIRE & G. THÉRAULAZ,
Journal of the Royal Society Interface, 117 n°. 20200496 (2020).
- (3) "A family of functional inequalities: Lojasiewicz inequalities and displacement convex functions",
A. BLANCHET & J. BOLTE,
Journal of Functional Analysis, 25 n°7 (2018), pp. 1650-1673.
- (4) "How social information can improve estimation accuracy in human groups",
B. JAYLES, H. KIM, R. ESCOBEDO, S. CEZERA, A. BLANCHET, T. KAMEDA, C. SIRE & G. THÉRAULAZ,
Proceedings of the National Academy of Sciences of the United States of America, 114 n°47 (2017).
- (5) "Kinetic models for topological nearest-neighbor interactions",
A. BLANCHET & P. DEGOND,
Journal of Statistical Physics, 169 n°5 (2017), pp. 929-950.
- (6) "Topological Interactions in a Boltzmann-Type Framework",
A. BLANCHET & P. DEGOND,
Journal of Statistical Physics, 163 n°1 (2016), pp. 41-60.

- (7) "Existence and uniqueness of equilibrium for a spatial model of social interactions",
 A. BLANCHET, P. MOSSAY & F. SANTAMBROGIO,
International Economic Review, 57 n°1 (2016), pp. 31-60.
- (8) "A hybrid variational principle for the Keller-Segel system in \mathbb{R}^2 ",
 A. BLANCHET, J. CARRILLO, D. KINDERLEHRER, M. KOWALCZYK, PH. LAURENÇOT & S. LISINI,
Mathematical Modelling and Numerical Analysis, 49 n°6 (2015), pp. 1553-1576.
- (9) "Optimal transport and Cournot-Nash equilibria",
 A. BLANCHET & G. CARLIER,
Mathematics of Operations Research, 41 n°1 (2015), pp. 125-145.
- (10) "Remarks on existence and uniqueness of Cournot-Nash equilibria in the non-potential case",
 A. BLANCHET & G. CARLIER,
Mathematics and Financial Economics, 8 n°4 (2014), pp. 417-433.
- (11) "From Nash to Cournot-Nash equilibria via the Monge-Kantorovich problem",
 A. BLANCHET & G. CARLIER,
Philosophical Transactions of the Royal Society A, 372 n°2028 (2014).
- (12) "A gradient flow approach to the Keller-Segel systems",
 A. BLANCHET,
RIMS Kokyuroku, n°1837 (2013), pp. 52-73.
- (13) "The parabolic-parabolic Keller-Segel system with critical diffusion as a gradient flow in \mathbb{R}^d , $d \geq 3$ ",
 A. BLANCHET & PH. LAURENÇOT,
Communication in Partial Differential Equations, 38 n°4 (2013), pp. 658-686.
- (14) "Functional inequalities, thick tails and asymptotics for the critical mass Patlak-Keller-Segel model",
 A. BLANCHET, J. CARRILLO & E. CARLEN,
Journal of Functional Analysis, 261 n°5 (2012), pp. 2142-2230.
- (15) "Finite mass self-similar blowing-up solutions of a chemotaxis system with non-linear diffusion",
 A. BLANCHET & PH. LAURENÇOT,
Communications on Pure and Applied Analysis, 11 n°1 (2012), pp. 47-60.
- (16) "On the parabolic-elliptic Patlak-Keller-Segel system in dimension 2 and higher",
 A. BLANCHET,
Sémin. Laurent Schwartz – EDP et applications (2011-2012).
- (17) "Improved intermediate asymptotics for the heat equation",
 J.-P. BARTIER, A. BLANCHET, J. DOLBEAULT & M. ESCOBEDO,
Applied Mathematics Letters, 24 (2011), pp. 76-81.
- (18) "Large time asymptotics of the doubly nonlinear equation in the non-displacement convexity regime",
 M. AGUEH, A. BLANCHET & J. CARRILLO,
Journal of Evolution Equations, 10 n°1 (2010), pp. 59-84.
- (19) "Asymptotic behaviour for small mass in the two-dimensional parabolic-elliptic Keller-Segel model",
 A. BLANCHET, J. DOLBEAULT, M. ESCOBEDO & J. FERNANDEZ,
Journal of Mathematical Analysis and Applications, 361 n°2 (2010), pp. 533-542.
- (20) "Stochastic Stokes' drift, homogenized functional inequalities, and large time behavior of Brownian ratchets",
 A. BLANCHET, J. DOLBEAULT & M. KOWALCZYK,
SIAM Journal of Mathematical Analysis, 41 n°1 (2009), pp. 46-76.
- (21) "Critical mass for a Patlak-Keller-Segel model with degenerate diffusion in higher dimensions",
 A. BLANCHET, J. CARRILLO & PH. LAURENÇOT,
Calculus of Variations and partial differential equations, 35 n°2 (2009), pp. 133-168.
- (22) "Asymptotics of the fast diffusion equation via entropy estimates",
 A. BLANCHET, M. BONFORTE, J. DOLBEAULT, G. GRILLO & J.-L. VÁZQUEZ,
Archive for Rational Mechanics and Analysis, 191 n°2 (2009), pp. 347-385.
- (23) "Travelling fronts in stochastic Stokes' drifts",
 A. BLANCHET, J. DOLBEAULT & M. KOWALCZYK,
Physica A: Statistical Mechanics and its Applications, 387 n°23 (2008), pp. 5741-5751.

- (24) "Convergence of the mass-transport steepest descent scheme for the sub-critical Keller-Segel model",
 A. BLANCHET, V. CALVEZ & J. CARRILLO, *SIAM Journal of Numerical Analysis*, 46 n°2 (2008) , pp. 691-721.
- (25) "Infinite time aggregation for the critical Patlak-Keller-Segel model in \mathbb{R}^2 ",
 A. BLANCHET, J. CARRILLO & N. MASMOUDI,
Communications on Pure and Applied Mathematics, 61 n°10 (2008), pp. 1449-1481
- (26) "Hardy-Poincaré inequalities and applications to nonlinear diffusions",
 A. BLANCHET, M. BONFORTE, J. DOLBEAULT, G. GRILLO & J.-L. VÁZQUEZ,
Comptes Rendus de l'Académie des Sciences, 344 (2007), pp. 431-436.
- (27) "On the singular set of the parabolic obstacle problem",
 A. BLANCHET,
Journal of Differential Equations, 231 (2006), pp. 656-672.
- (28) "Two-dimensional Keller-Segel model: Optimal critical mass and qualitative properties of the solutions",
 A. BLANCHET, J. DOLBEAULT & B. PERTHAME,
Electronic Journal of Differential Equations, 44 (2006), pp. 1-32.
- (29) "On the regularity of the free boundary of the parabolic obstacle problem. Application to American options",
 A. BLANCHET,
Nonlinear Analysis Series A: Theory, Methods & Applications, 65 (2006), pp. 1362-1378.
- (30) "On the continuity of the time derivative of the solution to the parabolic obstacle problem with variable coefficients",
 A. BLANCHET, J. DOLBEAULT & R. MONNEAU,
Journal de Mathématiques Pures et Appliquées, 85 (2006), pp. 371-414.
- (31) "Advances in Artificial Economics",
 F. AMBLARD, A. BLANCHET, F. MIGUEL, B. GAUDOU,
Lecture Notes in Economics and Mathematical Systems, Springer, 676 (2015)
- (32) "On the one-dimensional parabolic obstacle problem with variable coefficients",
 A. BLANCHET, J. DOLBEAULT & R. MONNEAU,
Progress in Nonlinear Differential Equations and Their Applications, 63 (2005), pp. 59-66.

2.2. Organisation of meetings.

2.2.1. Conferences.

- 25-29 March 2019: Workshop on "Optimal Transport and Applications" – Université Paul Sabatier
- 31 Oct. - 2 Nov. 2018: "SMS" Workshop – Imperial College London
- 16-17 Nov. 2015: "Mathematics and Social Sciences" Workshop – Imperial College London
- 2-23 juin 2015: "Gradient Flow in Paris" – IHP
- 1-2 Sept. 2014: 10th edition of "Artificial Economics Conference" – Universitat Autònoma de Barcelona
- 1–5 April 2014: Week "Optimal transport" in the CIMI trimestre EDP-proba – UPS
- 18 Dec. 2013: Conference "Modelling Economics and Social Phenomena" – TSE/IAST
- 25-30 Aug. 2013: Mini-symposium "Functional Inequalities and Applications" – Centro de Ciencias de Benasque
- 30 Aug. 2011: Mini-symposium "Aggregation versus Diffusion" – Centro de Ciencias de Benasque
- 26-27 Sept. 2010: Conference "Cooperation in Multi-Agents Models Applied to Economics and Social Sciences" – TSE
- 1-3 Sept. 2009: Conference "Optimal Transport and Kinetics Applied to Socio-Economics" – TSE
- 18-20 March 2008: Conference "Reaction-Diffusion Systems with Chemotaxis" – Université d'Orsay
- 5-11 Aug. 2007: EQUADIFF 2007 – Mini-symposium "Non-Linear Diffusion Equations" – Vienna University of Technology
- 1 June 2005: Workshop "Mathématiques Appliquées en Biologie" – CERMICS-ENPC

2.2.2. Seminars.

- 2009-2011: Seminar "MAthématiques de la Décision" (TSE)

- 2008-2009: Workshop of the ANR EVaMEF project (TSE)
- 2006-2007: Post-doc workshop (CRM – Universitat Autònoma de Barcelona)
- 2004-2005: Seminar de Calcul Scientifique (CERMICS – ENPC)
- 2004-2006: PhD workshop (CEREMADE – Université Paris-Dauphine)

3. TEACHING ACTIVITIES

3.1. Teaching at TSE.

- 2022–2023: Algebra refresher (M2), optimization (M1), optimisation (L3), algèbre approfondie (L2)
- July 2022: Head of the mathematics oral admission test to TSE
- 2021–2022: Algebra refresher (M2), optimisation (L3), algèbre approfondie (L2)
- 2020–2021: Algebra refresher (M2), optimization (M1), optimisation (L3), algèbre approfondie (L2)
- 2019–2020: Algebra refresher (M2), optimization (M1), optimisation (L3), algèbre approfondie (L2)
- 2018–2019: Algebra refresher (M2), optimization (M1), algèbre approfondie (L2), algèbre linéaire (L1)
- 2017–2018: Algebra refresher (M2), advanced calculus (M1), algèbre approfondie (L2), algèbre linéaire (L1)
- 2016–2017: Analysis refresher (M2), Algebra refresher (M2), advanced calculus (M1), algèbre approfondie (L2), algèbre linéaire (L1)
- 2015–2016: Analysis refresher (M2), Algebra refresher (M2), advanced calculus (M1), algèbre approfondie (L2), algèbre linéaire (L1)
- 2014–2015: Analysis refresher (M2), Algebra refresher (M2), Advanced calculus (M1), algèbre linéaire (L1), compléments de mathématiques (L1)
- 2013–2014: Analysis refresher (M2), Algebra refresher (M2), Advanced calculus (M1), algèbre linéaire (L1), compléments de mathématiques (L1)
- 2011–2012: Analysis refresher (M2), Algebra refresher (M2), Advanced calculus (M1)
- 2010–2011: Free boundary problems (M2, Université Paul Sabatier), Analysis (M2), Algebra (M2), Advanced calculus (M1), algèbre linéaire (L1)
- 2009–2010: Free boundary problems (M2, Université Paul Sabatier), Analysis (M2), Algebra (M2), Advanced calculus (M1), algèbre linéaire (L1)
- 2008–2009: Analysis (M2), Algebra (M2), Advanced calculus (M1), algèbre linéaire (L1)

3.2. Summer-schools.

- 14 – 18 Dec. 2015: M2, University of Verona (Italy), “Optimal transportation theory and applications” (18h)
- 20–24 July 2015: Summer school “Frontiers of Mathematics”– UIMP (Santander, Spain), “On the Keller-Segel systems” (9h)
- 3–4 Dec. 2011: Summer-school “Singularities Arising in Nonlinear Problems” – SNP (Kyoto, Japon), “Optimal transport methods applied to biology” (6h)
- 17–21 Sept. 2007: “Optimal transportation” summer-school – Wolfgang Pauli Institut (Vienna, Austria), “Optimal transportation and entropy methods” (8h)

3.3. Supervision.

- UPS M1 Master’s thesis (co-supervision with M. Kleshnina): L. de Bentzmann - “Evolutionary games in repeated games in groups” (2022),
- UPS M2 Master’s thesis: F. Cazes – “Propagation de la désinformation” (2021),
- TSE M1 Master’s thesis: L. Bessagnet – “Théorie des jeux comportementale” (2020),
- TSE M2 Master’s thesis: S. Declerck – “norms in a group in a bandit game” (2019),
- M. Fort-Claisse, Fondation La Dépêche grant (2014–2017).
- UPS M2 Master’s thesis (co-supervision with P. Cattiaux): X. Pellet – “Applications du transport optimal aux modèles de Keller-Segel” (2014),
- UPS M1 Master’s thesis: D. Khireche – “simulation numérique des options américaines” (July 2009).

3.4. Popularisation.

- Talk at the cercle Sofia Kovalevskaya: “Modelling with game theory” (2012),
- Talk in front of College students for the Lycée de Foix: “Modélisation mathématiques : physique, biologie et économie” (2012),
- Supervision of lycée Fermat MP students TIPE project “Transport optimal et applications” (2013–2014),
- Popularisation article *Propriétés émergentes en économie* in MPT2013,
- Popularisation article *Quand les cellules font bloc* in MPT2013.

4. OTHER

4.1. Referee activities.

- Comité de suivi of Thibault Caillet’s PhD thesis (advisor: F. Santambrogio) (2022–),
- Referee for Rosemonde Lareau-Dussault’s PhD thesis “coupled education and labour market” (advisor: R. McCann – University of Toronto, 2018),
- Referee for Franca Hoffmann’s PhD thesis “Keller-Segel-Type Models and Kinetic Equations for Interacting Particles” (advisor: P. Markowich – University of Cambridge, 2017),
- Referee for Simone Fagioli’s PhD thesis “Non-local intereration equations with two species” (advisor: M. DiFrancesco – University of l’Aquila, 2015),
- Referee for Mohammed Mraoua’s PhD thesis “Gestion du risque climatique par l’utilisation des produits dérivés d’assurance”,
- Referee for the Wittgenstein Award of the Austrian Science Fund,
- Referee for the FNRS,
- Referee for the ANR,
- Referee for various journals (ARMA, CPDE, JMPA, etc.).

4.2. Scientific responsibilities.

- Coordinator of the PRC project “Segregation models in social sciences” (with Imperial College London, UK) (2017 & 2018),
- Coordinator of the Transversalité project “MuSE: Multi-disciplinary study of emergence phenomena” (2015–2017),
- Responsible of the Toulouse pole of the ANR project GeoPor “Approche géométrique pour les écoulements en milieux poreux : théorie et numérique” (2014–2017),
- Coordinator of the PEPS project “Dynamiques et émergence en économie et en sciences sociales” (2013 & 2014),
- Coordinator of the ANR project EVAMEF “Modèles variationnels et d’évolution en économie et en finance” (2009–2012) with F. Bolley, G. Carlier, T. Mariotti, F. Santambrogio & S. Villeneuve.

4.3. Collective responsibilities.

- Member of the TIRIS “Comité de Programme – Recherche” (2023–),
- Research representative at IAST Executive Committee (2021–),
- Member of IAST Management Committee (2021–),
- Member of the DAPS Committee (2018–)
- Member of the Université Fédérale de Toulouse Academic Council (2013–2019),
- Member of the Université Toulouse 1 Capitole Research Committee (2012–2020),
- Exterior member of the Scientific Council of Université Paul Sabatier (2013–),
- Member of the GREMAQ department Council (2009–2017),
- Coordinator of opération post-doc: <http://postes.smai.emath.fr/postdoc/> (2013–),
- Member of opération postes: <http://postes.smai.emath.fr/> (2009–2012).

4.4. Societal responsibilities.

- President of Joli’mômes – association to promote a co-parental care of children: <https://www.jolimomes.com/>,
- President of GARCON – association to promote masculine contraceptions and gender equality: <https://garcon.link/>.