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ADRIEN BLANCHET  
Curriculum Vitæ(May 2019)

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## 1 Short Vitæ

<b>BLANCHET Adrien</b>	Born 22 November 1977 (41 years old)
Current position	Maître de conférences HDR at Université Toulouse 1 Capitole
Affiliation	TSE - Recherche
Labex	Toulouse School of Economics (TSE) & Institute for Advanced Study in Toulouse (IAST)
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Web-page	<a href="http://www.tse-fr.eu/people/adrien-blanchet">http://www.tse-fr.eu/people/adrien-blanchet</a>
<b>Training</b>	
3 Dec. 2012	Habilitation à diriger des recherches from Université Toulouse 1 – Capitole <i>Variationnal methods applied to biology and economics</i>
Jury	H. Berestycki, A. Bertozzi (referee), Y. Brenier (referee), P. Degond, J. Dolbeault, M. Le Breton, P. Markowich (referee), C. Sire.
12 Dec. 2005	PhD in Sciences from Université Paris-Dauphine <i>Monotonicity formulas applied to free boundary problems and biology</i>
Jury	H. Berestycki, J. Dolbeault (advisor), R. Monneau (advisor), H. Shahgholian (referee), H. Zaag (referee), J. Carrillo.
2001-2002	Master from Université Paris-Dauphine
Report	“Formule de monotonie et méthode d’explosion pour le problème de l’obstacle parabolique” under the supervision of R. Monneau (June-Sept. 2002).

## 2 Scientific activities

### 2.1 Publications

All my publications are downloadable on <http://www.tse-fr.eu/people/adrien-blanchet>.  
Bibliometry : 30 articles, 1605 citations, h-index = 18 (source : Google Scholar).

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| [30] | “A family of functional inequalities : Lojasiewicz inequalities and displacement convex functions”, A. BLANCHET & J. BOLTE, <i>Journal of Functional Analysis</i> , 25 n° 7 (2018), pp. 1650-1673.   |
| [29] | “How social information can improve estimation accuracy in human groups”, B. JAYLES, H. KIM, R. ESCOBEDO, S. CEZERA, A. BLANCHET, T.KAMEDA, C., & G. THERAULAZ, <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 114 n° 47 (2017). |

- [28] “Kinetic models for topological nearest-neighbor interactions”, A. BLANCHET & P. DEGOND, *Journal of Statistical Physics*, 169 n° 5 (2017), pp. 929-950.
- [27] “Topological Interactions in a Boltzmann-Type Framework”, A. BLANCHET & P. DEGOND, *Journal of Statistical Physics*, 163 n° 1 (2016), pp. 41-60.
- [26] “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.
- [25] “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.
- [24] “Optimal transport and Cournot-Nash equilibria”, A. BLANCHET & G. CARLIER, *Mathematics of Operations Research*, 41 n° 1 (2015), pp. 125-145.
- [23] “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.
- [22] “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).
- [21] “A gradient flow approach to the Keller-Segel systems”, A. BLANCHET, *RIMS Kokyuroku*, n° 1837 (2013), pp. 52-73.
- [20] “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.
- [19] “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.
- [18] “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.
- [17] “On the parabolic-elliptic Patlak-Keller-Segel system in dimension 2 and higher”, A. BLANCHET, *Sémin. Laurent Schwartz – EDP et applications* (2011-2012).
- [16] “Improved intermediate asymptotics for the heat equation”, J.-P. BARTIER, A. BLANCHET, J. DOLBEAULT & M. ESCOBEDO, *Applied Mathematics Letters*, 24 (2011), pp. 76-81.
- [15] “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.
- [14] “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.

- [13] “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.
- [12] “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.
- [11] “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.
- [10] “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.
- [9] “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.
- [8] “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
- [7] “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.
- [6] “On the singular set of the parabolic obstacle problem”, A. BLANCHET, *Journal of Differential Equations*, 231 (2006), pp. 656-672.
- [5] “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.
- [4] “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.
- [3] “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.
- [2] “Advances in Artificial Economics”, F. AMBLARD, A. BLANCHET, F. MIGUEL, B. GAUDOU, *Lecture Notes in Economics and Mathematical Systems*, Springer, 676 (2015)
- [1] “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

## Conferences

25-29 March 2019	Workshop on optimal transport and applications – Université Paul Sabatier <a href="http://www.cimi.univ-toulouse.fr/cov/en/workshop-optimal-transport-and-applications">http://www.cimi.univ-toulouse.fr/cov/en/workshop-optimal-transport-and-applications</a>
31 Oct. - 2 Nov. 2018	SMS Workshop – Imperial College London
16-17 Nov. 2015	1st Mathematics and social sciences Workshop – Imperial College London
2-23 juin 2015	Gradient flow in Paris – IHP
25-29 March 2019	Workshop on optimal transport and applications – Université Paul Sabatier
1-2 Sept. 2014	10th edition of “Artificial Economics Conference” – Universitat Autònoma de Barcelona <a href="http://www.irit.fr/AE2014/">http://www.irit.fr/AE2014/</a>
31 March- 4 April 2014	Week “Optimal transport” in the CIMI trimestre EDP-proba – UPS <a href="http://www.math.univ-toulouse.fr/edp_proba/8.php">http://www.math.univ-toulouse.fr/edp_proba/8.php</a>
18 Dec. 2013	Conference “Modelling economics and social phenomena” – TSE/IAST <a href="http://w3-gremaq.univ-tlse1.fr/MME/">http://w3-gremaq.univ-tlse1.fr/MME/</a>
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

## 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

2018-2019 Lecture	TSE & Université Toulouse 1 Capitole (128h) Algebra refresher (M2), optimization (M1), algèbre approfondie (L2), algèbre linéaire (L1)
2017-2018 Lecture	TSE & Université Toulouse 1 Capitole (128h) Algebra refresher (M2), optimization (M1), algèbre approfondie (L2), algèbre linéaire (L1)
2016-2017 Lecture	TSE & Université Toulouse 1 Capitole (128h) Analysis refresher (M2), Algebra refresher (M2), optimization (M1), algèbre approfondie (L2), algèbre linéaire (L1)
20-24 July 2015 Lecture	Summer school “Frontiers of Mathematics”– UIMP (Santander, Spain), 9h On the Keller-Segel systems
2015-2016 Lecture	TSE & Université Toulouse 1 Capitole (128h) Analysis refresher (M2), Algebra refresher (M2), advanced calculus (M1), algèbre approfondie (L2), algèbre linéaire (L1)

14 - 18 Dec. 2015 Lecture	M2, University of Verona (Italy), 18h Optimal transportation theory and applications
2014-2015 Lecture	TSE & Université Toulouse 1 Capitole (192h) Analysis (M2), Algebra (M2), Advanced calculus (M1), algèbre linéaire (L1), compléments de mathématiques (L1)
2013-2014 Lecture	TSE & Université Toulouse 1 Capitole (192h) Analysis (M2), Algebra (M2), Advanced calculus (M1), algèbre linéaire (L1), compléments de mathématiques (L1)
2011-2012 Lecture	TSE (96h) Analysis (M2), Algebra (M2), Advanced calculus (M1)
3-4 Dec. 2011 Lecture	Summer-school "Singularities Arising in Nonlinear Problems" – SNP (Kyoto, Japon), 6h Optimal transport methods applied to biology
2010-2011 Lecture	TSE (192h) Free boundary problems (M2, Université Paul Sabatier), Analysis (M2), Algebra (M2), Advanced calculus (M1), algèbre linéaire (L1)
2009-2010 Lecture	TSE (96h) Free boundary problems (M2, Université Paul Sabatier), Analysis (M2), Algebra (M2), Advanced calculus (M1), algèbre linéaire (L1)
2008-2009 Lecture	TSE (96h) Analysis (M2), Algebra (M2), Advanced calculus (M1), algèbre linéaire (L1)
17-21 Sept. 2007 Lecture	"Optimal transportation" summer-school – Wolfgang Pauli Institut (Vienna, Austria), 8h Optimal transportation and entropy methods
2007-2008 Exercise	1/2-ATER – Université de Lille 1 (96h) Analyse numérique des EDP (M1), analyse numérique (L3), parcours renforcé (L1)
2005-2006 Exercise	1/2-ATER – Université Paris-Dauphine (96h) Statistique 2 (L2), algèbre 2 (L2)
2004-2005 Exercise	Allocataire-moniteur – Université Paris-Dauphine (64h) Statistique 2 (L2), analyse-algèbre 2 (L1)
2003-2004 Exercise	Allocataire-moniteur – Université Paris-Dauphine (64h) Algèbre 2 (L2)
2002-2003 Exercise	Allocataire-moniteur – Université Paris-Dauphine (64h) Algèbre 2 (L2)
2001-2002	Tutorat – Université Paris-Dauphine (12h) Soutien scolaire (L1)

### 3.1 Supervision

- TSE Master student memoire : S. Declerck "norms in a group in a bandit game" (2019),
- M. Fort-Claisse, Fondation La Dépêche grant (2014-2017).
- Co-advison with P. Cattiaux of X. Pellet's master memoire (M2) : "Applications du transport optimal aux mo-

déles de Keller-Segel” (2014),

- Advision of D. Khireche’s master memoire (M1) : “simulation numérique des options américaines” (July 2009).

## 3.2 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

- Referee for Rosemonde Lareau-Dussault’s PhD thesis ‘coupled education and labour market” (University of Toronto, 2018),
- Referee for Franca Hoffmann’s PhD thesis “Keller-Segel-Type Models and Kinetic Equations for Interacting Particles : Long-Time Asymptotic Analysis” (University of Cambridge, 2017),
- Referee for Simone Fagioli’s PhD thesis “Non-local interation equations with two species” (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),
- Responsable of the toulousan 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” (2014),
- Coordinator of the PEPS project “Dynamiques et émergence en économie et en sciences sociales” (2013),
- 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 Conseil du DAPS (2018-)
- Member of the Université Fédérale de Toulouse Academic council (2013-),
- Member of the Université Toulouse 1 Capitole Research committee (2012-),
- Exterior member of the scientific council of Université Paul Sabatier (2013-),
- Member of the GREMAQ department council (2009-2015),
- Member of opération post-doc to advertise post-docs in mathematics (2013-),
- Member of opération postes (2009-2012).