

List of publications of Martino BARDI

Books

3. M. Bardi, I. Capuzzo-Dolcetta: Optimal control and viscosity solutions of Hamilton-Jacobi-Bellman equations. *Systems & Control: Foundations & Applications*. Birkhäuser, Boston, 1997. (MR 99e:49001) 2nd printing, Modern Birkhäuser Classics, 2008.
2. M. Bardi, T. Parthasarathy, T.E.S. Raghavan editors: Stochastic and differential games: theory and numerical methods, *Ann. Internat. Soc. Dynam. Games* vol. 4, Birkhäuser, Boston, 1999. (MR 99m:90005)
1. M. Bardi, M.G. Crandall, L.C. Evans, H.M. Soner, P.E. Souganidis: Viscosity solutions and applications (Montecatini Terme, 1995). Edited by I. Capuzzo Dolcetta and P. L. Lions. *Lecture Notes in Mathematics*, 1660. Springer-Verlag, Berlin, 1997. (MR 98f:49029)
[MR = Mathematical Reviews]

Research papers

(mostly available at <http://cvgmt.sns.it/people/bardi/>)

76. M. Bardi, E. Feleqi, P. Soravia: Regularity of the minimum time and of viscosity solutions of degenerate eikonal equations via generalized Lie brackets, ArXiv 1907.02399, to appear in *Set-Valued and Variational Analysis*
75. M. Bardi, A. Goffi: New strong maximum and comparison principles for fully nonlinear degenerate elliptic PDEs, *Calc. Var. PDE* (2019) 58:184.
DOI:10.1007/s00526-019-1620-2
74. M. Bardi, A. Cesaroni, E. Topp: Cauchy problem and periodic homogenization for nonlocal Hamilton-Jacobi equations with coercive gradient terms, to appear in *Proc. Roy. Soc. Edinburgh Sect. A*. DOI:10.1017/prm.2019.56
73. M. Bardi, M. Fischer: On non-uniqueness and uniqueness of solutions in some finite-horizon Mean Field Games, *ESAIM Control Optim. Calc. Var.* 25 (2019) 44.
DOI: 10.1051/cocv/2018026
72. M. Bardi, M. Cirant: Uniqueness of solutions in Mean Field Games with several populations and Neumann conditions, in "PDE models for multi-agent phenomena", P. Cardaliaguet, A. Porretta, F. Salvarani editors, pp. 1-20, Springer INdAM Series, 2018.
DOI: 10.1007/978-3-030-01947-1_1
71. Y. Achdou, M. Bardi, M. Cirant: Mean Field Games models of segregation, *Math. Models Methods Appl. Sci.* 27 (2017), 75–113, DOI: 10.1142/S0218202517400036
70. M. Bardi, E. Feleqi: Nonlinear elliptic systems and mean field games, *NoDEA Nonlinear Differential Equations Appl.* 23 (2016), 23–44, DOI: 10.1007/s00030-016-0397-7
69. M. Bardi, A. Cesaroni: Liouville properties and critical value of fully nonlinear elliptic operators, *J. Differential Equations* 261 (2016), 3775–3799, DOI: 10.1016/j.jde.2016.06.006
68. M. Bardi, A. Cesaroni, L. Rossi: Nonexistence of nonconstant solutions of some degenerate Bellman equations and applications to stochastic control, *ESAIM Control Optim. Calc. Var.* 22 (2016), 842–861, DOI: 10.1051/cocv/2015033

67. M. Bardi, J.P. Maldonado Lopez: A Dijkstra-type algorithm for dynamic games, *Dyn. Games Appl.* 6 (2016), 263–276, DOI: 10.1007/s13235-015-0156-0
66. M. Bardi, A. Cesaroni, A. Scotti: Convergence in Multiscale Financial Models with Non-Gaussian Stochastic Volatility, *ESAIM Control Optim. Calc. Var.* 22 (2016), 500–518, DOI: 10.1051/cocv/2015015
65. M. Bardi, A. Cesaroni, D. Ghilli: Large deviations for some fast stochastic volatility models by viscosity methods, *Discrete Contin. Dyn. Syst.* 35 (2015), 3965–3988. DOI: 10.3934/dcds.2015.35.3965
64. M. Bardi, G. Terrone: Periodic homogenization of deterministic control problems via limit occupational measures, in “Dynamics, Games, and Science”, J.-P. Bourguignon, R. Jeltsch, A. Pinto, M. Viana eds., pp. 105-116, *CIM Series in Mathematical Sciences 1*, Springer, 2015. DOI: 10.1007/978-3-319-16118-1_7
63. M. Bardi, F.S. Priuli: Linear-Quadratic N -person and Mean-Field Games with Ergodic Cost, *SIAM J. Control Optim.* 52 (2014), 3022–3052. DOI: 10.1137/140951795
62. Bardi, M.; Dragoni, F.: Subdifferential and Properties of Convex Functions with respect to Vector Fields, *J. Convex Analysis* 21 (2014), 785–810.
61. M. Bardi, F.S. Priuli: LQG Mean-Field Games with ergodic cost, *Proc. 52nd IEEE-CDC*, Florence, 2013, 2493–2498.
60. M. Bardi, P. Mannucci: Comparison principles and Dirichlet problem for fully non-linear degenerate equations of Monge-Ampère type. *Forum Math.* 25 (2013), 1291–1330; DOI: 10.1515/forum-2013-0067
59. M. Bardi, G. Terrone: On the Homogenization of some Non-coercive Hamilton-Jacobi-Isaacs Equations, *Commun. Pure Appl. Anal.* 12 (2013), 207–236; DOI:10.3934/cpaa.2013.12.237
58. M. Bardi: Explicit solutions of some Linear-Quadratic Mean Field Games, *Netw. Heterog. Media* 7 (2012), 243–261; DOI:10.3934/nhm.2012.7.243
57. M. Bardi, F. Dragoni: Convexity and Semiconvexity along Vector Fields, *Calc. Var. Partial Differential Equations* 42 (2011), 405–427.
56. M. Bardi, A. Cesaroni: Optimal control with random parameters: a multiscale approach, *Eur. J. Control* 17 (2011), 30–45.
55. M. Bardi, A. Cesaroni; L. Manca: Convergence by viscosity methods in multiscale financial models with stochastic volatility, *SIAM J. Finan. Math.* 1 (2010), 230–265.
54. O. Alvarez, M. Bardi: Ergodicity, stabilization, and singular perturbations for Bellman-Isaacs equations, *Mem. Amer. Math. Soc.* 204 (2010), pp. 1-88.
53. M. Bardi: On differential games with long-time-average cost, In “Advances in Dynamic games and their Applications”, P. Bernhard, V. Gaitsgory, O. Pourtallier editors, pp. 3-18, *Annals of the Internat. Soc. Dynam. Games*, 10, Birkhäuser, Boston, 2009.
52. M. Bardi, P. Mannucci: Comparison Principles for equations of Monge-Ampère type in Carnot groups: a direct proof, *Lecture Notes of Seminario Interdisciplinare di Matematica* Vol. 7 (2008), 41–51.

51. M. Bardi, P. Mannucci: Comparison Principles for subelliptic equations of Monge-Ampère type, *Boll. Unione Mat. Ital.* (9) 1 (2008), 489–495.
50. O. Alvarez, M. Bardi, C. Marchi: Multiscale singular perturbations and homogenization of optimal control problems, in "Geometric Control and Nonsmooth Analysis", F. Ancona, A. Bressan, P. Cannarsa, F.H. Clarke, P.R. Wolenski eds., pp. 1–27, *Series on Advances in Mathematics for Applied Sciences*, 76, World Scientific Publishing, Singapore 2008.
49. M. Bardi, A. Cesaroni: Almost sure properties of controlled diffusions and worst case properties of deterministic systems, *ESAIM Control Optim. Calc. Var.* 14 (2008), 343–355.
48. O. Alvarez, M. Bardi, C. Marchi: Multiscale problems and homogenization for second-order Hamilton-Jacobi equations, *J. Differential Equations* 243 (2007), 349–387.
47. Alvarez, O.; M. Bardi: Ergodic problems in differential games, in "Advances in Dynamic Game Theory", S. Jorgensen, M. Quincampoix, and T.L. Vincent eds., pp. 131–152, *Ann. Internat. Soc. Dynam. Games*, 9, Birkhäuser, Boston, 2007.
46. M. Bardi, P. Mannucci: On the Dirichlet problem for non-totally degenerate fully nonlinear elliptic equations, *Commun. Pure Appl. Anal.* 5 (2006), 709–731.
45. M. Bardi, A. Cesaroni: Almost sure stabilizability of controlled degenerate diffusions, *SIAM J. Control Optim.* 44 (2005), 75–98.
44. Alvarez, O.; M. Bardi: Singular perturbations of nonlinear degenerate parabolic PDEs: a general convergence result, *Arch. Rat. Mech. Anal.* 170 (2003), 17–61.
43. M. Bardi, Y. Giga: Right accessibility of semicontinuous initial data for Hamilton-Jacobi equations, *Commun. Pure Appl. Anal.* 2 (2003), 447–459.
42. M. Bardi, F. Da Lio: Propagation of maxima and strong maximum principle for fully nonlinear degenerate elliptic equations. Part II: concave operators, *Indiana Univ. Math. J.* 52 (2003), 607–627.
41. M. Bardi, R. Jensen: A geometric characterization of viable sets for controlled degenerate diffusions, *Set-Valued Analysis* 10 (2002), 129–141.
40. Alvarez, O.; M. Bardi: Viscosity solutions methods for singular perturbations in deterministic and stochastic control, *SIAM J. Control Optim.* 40 (2001), 1159–1188.
39. M. Bardi, A. Cesaroni: Viscosity Lyapunov functions for almost sure stability of controlled degenerate diffusions, in "Elliptic and parabolic problems, Proceedings of the 4th European Conference, Rolduc and Gaeta 2001", J. Bemelmans et al. eds., pp. 322–331, World Scientific, Singapore, 2002.
38. M. Bardi, F. Da Lio: Propagation of maxima and strong maximum principle for fully nonlinear degenerate elliptic equations. Part I: convex operators, *Nonlinear Anal.* 44 (2001), 991–1006.
37. M. Bardi, P. Goatin; H. Ishii: A Dirichlet type problem for nonlinear degenerate elliptic equations arising in time-optimal stochastic control, *Adv. Math. Sci. Appl.* 10 (2000), 329–352.

36. Bardi, M.; S. Koike; P. Soravia: Pursuit-evasion games with state constraints: dynamic programming and discrete-time approximations, *Discrete Continuous Dynamical Systems* 6 (2000), 361–380. (MR 2001b:91018)
35. Bardi, M.; Da Lio, F.: On the strong maximum principle for fully nonlinear degenerate elliptic equations, *Arch. Math.* 73 (1999), 276–285.
34. Bardi, M.; Goatin, P.: Invariant sets for controlled degenerate diffusions: a viscosity solutions approach, in “Stochastic Analysis, Control, Optimization and Applications: A Volume in Honor of W.H. Fleming”, W.M. McEneaney, G.G. Yin, and Q. Zhang eds., pp. 191–208, Birkhäuser, Boston, 1999. (MR 2000g:49034)
33. Bardi, M.; M. Falcone; P. Soravia: Numerical methods for pursuit-evasion games via viscosity solutions, in “Stochastic and differential games: theory and numerical methods”, M. Bardi, T. Parthasarathy e T.E.S. Raghavan eds., pp. 105–175, Ann. Internat. Soc. Dynam. Games, 4, Birkhäuser, Boston, 1999. (MR 2000f:49034)
32. Bardi, M.; Bottacin, S.: On the Dirichlet problem for nonlinear degenerate elliptic equations and applications to optimal control, *Rend. Sem. Mat. Univ. Pol. Torino* 56 (1998), 13–39.
31. Bagagiolo, F.; Bardi, M.: Singular perturbation of a finite horizon problem with state-space constraints. *SIAM J. Control Optim.* 36 (1998), no. 6, 2040–2060. (MR 99h:49040)
30. Bardi, M.; Faggian, S.: Hopf-type estimates and formulas for nonconvex nonconcave Hamilton-Jacobi equations. *SIAM J. Math. Anal.* 29 (1998), 1067–1086. (MR 99e:35023)
29. Bardi, M.; Da Lio, F.: On the Bellman equation for some unbounded control problems. *NoDEA Nonlinear Differential Equations Appl.* 4 (1997), 491–510. (MR 98m:49048)
28. Bagagiolo, F.; Bardi, M.; Capuzzo Dolcetta, I.: A viscosity solutions approach to some asymptotic problems in optimal control. *Partial differential equation methods in control and shape analysis (Pisa)*, 29–39, Lecture Notes in Pure and Appl. Math., 188, Dekker, New York, 1997. (MR 98d:49037)
27. Bardi, M.; Bottacin, S.; Falcone, M.: Convergence of discrete schemes for discontinuous value functions of pursuit-evasion games. *New trends in dynamic games and applications*, 273–304, Ann. Internat. Soc. Dynam. Games, 3, Birkhäuser Boston, Boston, MA, 1995. (MR 97g:90199)
26. Bardi, M.: Homogenization of quasilinear elliptic equations with possibly super-quadratic growth. *Nonlinear variational problems and partial differential equations (Isola d’Elba, 1990)*, 44–56, Pitman Res. Notes Math. Ser., 320, Longman Sci. Tech., Harlow, 1995. (MR 96d:35011)
25. Bardi, M.; Soravia, P.: A comparison result for Hamilton-Jacobi equations and applications to some differential games lacking controllability. *Funkcial. Ekvac.* 37 (1994), no. 1, 19–43. (MR 95f:49038)
24. Bardi, M.; Falcone, M.; Soravia, P.: Fully discrete schemes for the value function of pursuit-evasion games. *Advances in dynamic games and applications (Geneva, 1992)*, 89–105, Ann. Internat. Soc. Dynam. Games, 1, Birkhäuser Boston, Boston, MA, 1994. (MR 95a:90229)

23. Bardi, M.; Staicu, V.: The Bellman equation for time-optimal control of noncontrollable, nonlinear systems. *Acta Appl. Math.* 31 (1993), no. 3, 201–223. (MR 94h:49052)
22. Bardi, M.; Sartori, C.: Convergence results for Hamilton-Jacobi-Bellman equations in variable domains. *Differential Integral Equations* 5 (1992), no. 4, 805–816. (MR 93i:35031)
21. Badiale, M.; Bardi, M.: Asymptotic symmetry of solutions of nonlinear partial differential equations. *Comm. Pure Appl. Math.* 45 (1992), no. 7, 899–921. (MR 93c:35035)
20. Bardi, M.; Soravia, P.: Approximation of differential games of pursuit-evasion by discrete-time games. *Differential games—developments in modelling and computation* (Espoo, 1990), 131–143, *Lecture Notes in Control and Inform. Sci.*, 156, Springer, Berlin, 1991. (MR 93h:90124)
19. Bardi, M.; Sartori, C.: Differential games and totally risk-averse optimal control of systems with small disturbances. *Differential games—developments in modelling and computation* (Espoo, 1990), 91–99, *Lecture Notes in Control and Inform. Sci.*, 156, Springer, Berlin, 1991.
18. Bardi, M.; Sartori, C.: Approximation and regular perturbation of optimal control problems via Hamilton-Jacobi theory. *Appl. Math. Optim.* 24 (1991), no. 2, 113–128. (MR.92k:49051)
17. Bardi, M.; Perthame, B.: Uniform estimates for some degenerating quasilinear elliptic equations and a bound on the Harnack constant for linear equations. *Asymptotic Anal.* 4 (1991), no. 1, 1–16. (MR 92a:35028)
16. Bardi, M.; Osher, S.: The nonconvex multidimensional Riemann problem for Hamilton-Jacobi equations. *SIAM J. Math. Anal.* 22 (1991), no. 2, 344–351. (MR 91k:35056)
15. Bardi, M.; Soravia, P.: Hamilton-Jacobi equations with singular boundary conditions on a free boundary and applications to differential games. *Trans. Amer. Math. Soc.* 325 (1991), no. 1, 205–229. (MR 91h:49034)
14. Badiale, M.; Bardi, M.: Symmetry properties of solutions of Hamilton-Jacobi equations without uniqueness. *Nonlinear Anal.* 15 (1990), no. 11, 1031–1043. (MR 92d:35067)
13. Bardi, M.; Falcone, M.: Discrete approximation of the minimal time function for systems with regular optimal trajectories. *Analysis and optimization of systems* (Antibes, 1990), 103–112, *Lecture Notes in Control and Inform. Sci.*, 144, Springer, Berlin, 1990. (MR 91m:65177)
12. Bardi, M.; Perthame, B.: Exponential decay to stable states in phase transitions via a double log-transformation. *Comm. Partial Differential Equations* 15 (1990), no. 12, 1649–1669. 35B05 (MR 91m:35021)
11. Bardi, M.; Falcone, M.: An approximation scheme for the minimum time function. *SIAM J. Control Optim.* 28 (1990), no. 4, 950–965. (MR 91d:49029)
10. Bardi, M.; Soravia, P.: A PDE framework for games of pursuit-evasion type. *Differential games and applications* (Sophia-Antipolis, 1988), 62–71, *Lecture Notes in Control and Inform. Sci.*, 119, Springer, Berlin, 1989.
9. Bardi, M.: A boundary value problem for the minimum-time function. *SIAM J. Control Optim.* 27 (1989), no. 4, 776–785. (MR 90i:49034)

8. Bardi, M.: An asymptotic formula for the Green's function of an elliptic operator. *Ann. Scuola Norm. Sup. Pisa Cl. Sci.* (4) 14 (1987), no. 4, 569–586. (MR 90e:35050)
7. Bardi, M.: Asymptotic spherical symmetry of the free boundary in degenerate diffusion equations. *Ann. Mat. Pura Appl.* (4) 148 (1987), 117–130. (MR 89f:35215)
6. Bardi, M.: A nonautonomous nonlinear functional-differential equation arising in the theory of population dynamics. *J. Math. Anal. Appl.* 109 (1985), no. 2, 492–508. (MR 86m:92023)
5. Bardi, M.: Geometric properties of solutions of Hamilton–Jacobi equations. *J. Differential Equations* 58 (1985), no. 3, 364–380. (MR 86j:35032)
4. Bardi, M.; Evans, L. C.: On Hopf's formulas for solutions of Hamilton–Jacobi equations. *Nonlinear Anal.* 8 (1984), no. 11, 1373–1381. (MR 85k:35043)
3. Bardi, M.: An equation of growth of a single species with realistic dependence on crowding and seasonal factors. *J. Math. Biol.* 17 (1983), no. 1, 33–43. (MR 85c:92025)
2. Bardi, M.: Exchange of stability along a branch of periodic solutions of a single specie model. *Equadiff 82* (Würzburg, 1982), 73–82, *Lecture Notes in Math.*, 1017, Springer, Berlin-New York, 1983. (MR 85b:92006)
1. Bardi, M.: Predator-prey models in periodically fluctuating environments. *J. Math. Biol.* 12 (1981), no. 1, 127–140. (MR 84e:92025)

Conference proceedings, preprints, technical reports, lecture notes

(mostly available at <http://cvgmt.sns.it/people/bardi/>)

12. Bardi, M.; Dragoni, F.: Convexity along vector fields and applications to equations of Monge-Ampère type. *Progress in analysis and its applications*, 455-462, World Sci. Publ., Hackensack, NJ, 2010.
11. M. Bardi, P. Mannucci: Comparison principles and Dirichlet problem for equations of Monge-Ampère type associated to vector fields. Preprint Dip. Matematica P. e A., Università di Padova, 2009.
10. Alvarez O.; M. Bardi: Some ergodic problems for differential games, in "Control Systems: Theory, Numerics and Applications, Roma 2005", U. Boscain et al. eds., Proceedings of Science, SISSA, Trieste, 2005.
9. M. Bardi: Metodi di viscosità per l'omogeneizzazione di equazioni nonlineari a derivate parziali, *Lecture Notes*, rapporto interno n. 2, Dip. Matematica P. e A., Università di Padova, 2003.
8. Alvarez O.; M. Bardi: A general convergence result for singular perturbations of fully nonlinear degenerate parabolic PDEs, preprint n. 4, Dip. Matematica P. e A., Università di Padova, 2002.
7. Bardi, M.; Da Lio, F.: Propagation of maxima and strong maximum principle for viscosity solutions of degenerate elliptic equations, in "International Conference on Differential Equations, Berlin 1999", B. Fiedler, K. Gröger and J. Sprekels eds., pp. 589–591, World Scientific, River Edge, 2000.

6. Bardi, M.; Da Lio, F.: Propagation of maxima and strong maximum principle for degenerate elliptic equations, in “Proceedings of the 8th Tokyo Conference on Nonlinear PDE, 1998”, H. Ishii ed., pp.17–28, 1999.
5. Bardi, M; S. Bottacin: Characteristic and irrelevant boundary points for viscosity solutions of nonlinear degenerate elliptic equations, preprint n. 25, Dip. Matematica P. e A., Università di Padova, 1998.
4. Bardi, M; S. Bottacin; F. Da Lio: Soluzioni di viscosità di equazioni nonlineari ellittiche degeneri, Lecture Notes, preprint n. 4, Dip. Matematica P. e A., Università di Padova, 1998.
3. Bardi, M.: Viscosity solutions of Isaacs’ equations and existence of a value, in Proceedings of the Summer School on Dynamic Games, Villasimius (Cagliari) 1992.
2. Bardi, M; P. Soravia: Some remarks on the Bellman equation of the minimum time function with superlinear vector fields, Technical report, Università di Padova, 1992.
1. Bardi, M; P. Soravia: Time-optimal control, Lie brackets, and Hamilton-Jacobi equations, Technical report, Università di Padova, 1991.

Padua, March 10th, 2020.