References

1. Aamo, O.M., Krstic, M., Bewley, T.R.: Control of mixing by boundary feedback in $2D$-channel. Automatica **39**, 1597–1606 (2003)
2. Adams, D.: Sobolev Spaces. Academic, New York (1975)
3. Ammar Khodja, F., Benabdallah, A., Dupaix, C., Kostin, L.: Controllability to the trajectories of two-phase field models by one control force. SIAMJ. Control Optim. **42**(5), 1661–1680 (2003)
4. Andreu, F., Vaselles, V., Díaz, J.I., Mazón, J.M.: Some qualitative properties for the total variation flow. J. Funct. Anal. **188**(2), 516–547 (2002)
5. Aniculăesei, Gh., Aniţa, S.: Stabilization of the heat equation via internal feedback. Nonlinear Funct. Anal. Appl. **6**(2), 271–280 (2001)
6. Aniţa, S.: Internal stabilization of diffusion equation. Nonlinear Stud. **8**, 193–213 (2001)
7. Aniţa, S., Barbu, V.: Null controllability of nonlinear convective heat equations. ESAIM: Control Optim. Calc. Var. **5**, 157–173 (2000)
8. Aniţa, S., Barbu, V.: Local exact controllability of a reaction diffusion system. Differ. Integr. Equ. **14**(5), 577–587 (2001)
9. Aniţa, S., Tataru, D.: Null controllability of dissipative semilinear heat equation. Appl. Math. Optim. **46**(2), 97–105 (2002)
10. Araruna, F.D., Boldrini, J.L., Calsavara, B.M.R.: Optimal control and controllability of a phase field system with one control force. Appl. Math. Optim. **70**, 539–563 (2014)
11. Arris, R.: On stability criteria of chemical reaction engineering. Chem. Eng. Sci. **24**, 149–169 (1969)
12. Badra, M.: Feedback stabilization of the 2-D and 3-D Navier–Stokes equations based on an extended system. ESAIM: Control Optim. Calc. Var. **15**, 934–968 (2009)
13. Badra, M., Takahashi, T.: Stabilization of parabolic nonlinear systems with finite dimensional feedback or dynamical controllers: applications to the Navier-Stokes systems. SIAM J. Control Opitm. **49**(2), 420–463 (2011)
14. Bak, P., Tang, C., Wiesenfeld, K.: Self-organized criticality: an explanation of the $1/f$ noise. Phys. Rev. Lett. **59**, 381–394 (1987)
15. Balogh, A., Krstić, M.: Infinite dimensional backstepping-style feedback transformation for the heat equation with an arbitrary level of instability. Eur. J. Control **8**, 165–172 (2002)
16. Balogh, A., Liu, W.-L., Krstic, M.: Stability enhancement by boundary control in $2D$ channel flow. IEEE Trans. Autom. Control **11**, 1696–1711 (2001)
17. Barbu, V.: Nonlinear Semigroups and Differential Equations in Banach Spaces. Noordhoff, Leyden (1976)

18. Barbu, V.: Analysis and Control of Nonlinear Infinite Dimensional Systems. Academic, Boston (1993)
19. Barbu, V.: Mathematical Methods in Optimization of Differential System. Kluwer, Dordrecht (1994)
20. Barbu, V.: Exact controllability of the superlinear heat equations. Appl. Math. Optim. **42**, 73–89 (2000)
21. Barbu, V.: The Carleman inequality for linear parabolic equations in L^q norm. Differ. Integr. Equ. **15**, 363–372 (2001)
22. Barbu, V.: Controllability of parabolic and Navier–Stokes equations. Sci. Math. Japonicae **56**, 143–210 (2002)
23. Barbu, V.: Local controllability of the phase field system. Nonlinear Anal. Theory Methods Appl. **50**, 363–372 (2002)
24. Barbu, V.: Feedback stabilization of Navier–Stokes equations. ESAIM: Control Optim. Calc. Var. **9**, 197–206 (2003)
25. Barbu, V.: Stabilization of a plane channel flow by wall normal controllers. Nonlinear Anal. Theory. Methods Appl. **56**, 145–168 (2007)
26. Barbu, V.: Nonlinear Differential Equations of Monotone Type in Banach Spaces. Springer, New York (2010)
27. Barbu, V.: Self-organized criticality and convergence to equilibrium of solutions to nonlinear diffusion problems. Annu. Rev. Control. **340**, 52–61 (2010)
28. Barbu, V.: Stabilization of Navier-Stokes Flows. Springer, Berlin (2011)
29. Barbu, V.: Stabilization of Navier-Stokes equations by oblique boundary feedback controllers. SIAM J. Control Optim. **50**, 2288–2307 (2012)
30. Barbu, V.: Boundary stabilization of equilibrium solutions to parabolic equations. IEEE Trans. Autom. Control **58**(9), 2416–2420 (2013)
31. Barbu, V.: Exact null internal controllability for the heat equation on unbounded convex domains. ESAIM: Control Optim. Calc. Var. **6**(1), 222–235 (2013)
32. Barbu, V.: Note on the internal stabilization of stochastic parabolic equations with linearly multiplicative Gaussian noise. ESAIM: Control Optim. Calc. Var. **19**(4), 1055–1063 (2013)
33. Barbu, V.: Self-organized criticality of cellular automata model; absorbtion in finite-time of supercritical region into a critical one. Math. Methods Appl. Sci. 1–8 (2013)
34. Barbu, V., Iannelli, M.: Controllability of the heat equation with memory. Differ. Integr. Equ. **13**, 1393–1412 (2000)
35. Barbu, V., Lefter, C.: Internal stabilizability of Navier–Stokes Equations. Syst. Control Lett. **48**, 161–167 (2003)
36. Barbu, V., Wang, G.: Internal stabilization of semilinear parabolic systems. J. Math. Anal. Appl. **285**, 387–407 (2003)
37. Barbu, V., Triggiani, R.: Internal stabilization of Navier–Stokes equations with finite dimensional controllers. Indiana Univ. Math. J. **53**, 1443–1494 (2004)
38. Barbu, V., Da Prato, G.: The generator of the transition semigroup corresponding to a stochastic partial differential equation. Commun. Part. Differ. Equ. **33**, 1318–1330 (2008)
39. Barbu, V., Lasiecka, I.: The unique continuation property of eigenfunctions of Stokes–Oseen operator is generic with respect to coefficients. Nonlinear Anal. **75**, 3964–3972 (2011)
40. Barbu, V., Röckner, M.: Stochastic porous media equation and self-organized criticality: convergence to the critical state in all dimensions. Commun. Math. Phys. **311**, 539–555 (2012)
41. Barbu, V., Röckner, M.: Stochastic variational inequalities and applications to the total variation flow perturbed by linear multiplicative noise. Arch. Ration. Mech. Anal. **209**(3), 797–834 (2013)
42. Barbu, V., Tubaro, L.: Exact controllability of stochastic differential equations with multiplicative noise (submitted)
43. Barbu, V., Rascanu, A., Tessitore, G.: Carleman estimates and controllability of stochastic heat equation with multiplicative noise. Appl. Math. Optim. **47**, 97–120 (2003)

44. Barbu, V., Lasiecka, I., Triggiani, R.: Boundary stabilization of Navier–Stokes equations. Am. Math. Soc. **852**, 1–145 (2006)
45. Barbu, V., Lasiecka, I., Triggiani, R.: Abstract setting for tangential boundary stabilization of Navier–Stokes equations by high and low-gain feedback controllers. Nonlinear Anal. **64**, 2704–2746 (2006)
46. Barbu, V., Da Prato, G., Röckner, M.: Stochastic porous media equation and self-organized criticality. Commun. Math. Phys. **285**, 901–923 (2009)
47. Barbu, V., Rodrigues, S., Shiriakyan, A.: Internal exponential stabilization to a nonstationary solution for 3D Navier–Stokes equations. SIAM J. Control Optim. **49**, 1454–1478 (2011)
48. Barbu, V., Da Prato, G., Röckner, M.: Stochastic Porous Media Equations. Springer, Berlin (2016)
49. Barbu, V., Colli, J.P., Gillardi, G., Marinoschi, G.: Feedback stabilization of the Cahn-Hilliard type system for phase separation. J. Differ. Equ. **262**, 2286–2334 (2017)
50. Beceanu, M.: Local exact controllability of nonlinear diffusion equation in 1-D. Abstr. Appl. Anal. **14**, 793–811 (2003)
51. Bensoussan, A., Da Prato, G., Delfour, M.C., Milter, S.K.: Representation and Control of Infinite Dimensional Systems. Systems & Control Foundations & Applications, vol. I. Birkhäuser, Boston (2005)
52. Bošković, D.M., Krstić, M., Liu, W.: Boundary control of an unstable heat equation. IEEE Trans. Autom. Control **46**, 2028–2038 (2001)
53. Breiten, T., Kunisch, K.: Riccati based feedback control of the monodomain equations with the FitzHugh-Nagumo model. SIAM J. Control Optim. **52**, 4057–4081 (2014)
54. Brezis, H.: Opérateurs Maximaux Monotones et semigroupes de contractions dans les espaces de Hilbert. North Holland, Amsterdam (1973)
55. Brezis, H.: Functional Analysis, Sobolev Spaces and Partial Differential Equations. Springer, Berlin (2011)
56. Cafiero, R., Loreto, V., Pietronero, A., Zapperi, Z.: Local rigidity and self-organized criticality for avalanches. Europhys. Lett. **29**, 111–116 (1995)
57. Caginalp, C.: An analysis of a phase field model of a free boundary. Arch. Ration. Mech. Anal. **92**, 205–243 (1986)
58. Cannarsa, P., Fragnelli, G., Rocchetti, D.: Controllability results for a class of one-dimensional degenerate parabolic problems in nondivergence form. J. Evol. Equ. **8**, 583–616 (2008)
59. Cannarsa, P., Martinez, P., Vancostenoble, J.: Global Carleman estimates for degenerate parabolic operators with applications. Mem. Am. Math. Soc. **239** (2016)
60. Coron, J.M.: Control and Nonlinearity. Mathematical Survey and Monographs, vol. 136. American Mathematical Society, Providence (2007)
61. Coron, J.M., Guilleron, J.Ph.: Control of three heat equations coupled with two cubic nonlinearities. SIAM J. Control Optim. **55**, 989–1019 (2017)
62. Coron, J.M., Guerrero, S., Rossier, L.: Null controllability of a parabolic system with a cubic coupling term. SIAM J. Control Optim. **48**, 5629–5635 (2010)
63. Coron, J.-M., Díaz, J.I., Drici, A., Mingazzinbi, T.: Global null controllability of the 1-dimensional nonlinear slow diffusion equation. Chin. Ann. Math. B **34**(3), 333–344 (2013)
64. Da Prato, G., Zabczyk, J.: Stochastic Equations in Infinite Dimension. Cambridge University Press, Cambridge (2013)
65. Deimling, K.: Nonlinear Analysis. Springer, Berlin (1990)
66. Diaz, J.I., Henry, J., Ramos, A.M.: On the approximate controllability of some semilinear parabolic boundary-value problems. Appl. Math. Optim. **37**, 71–97 (1998)
67. Dubova, A., Osses, A., Puel, J.P.: Exact controllability to trajectories for semilinear heat equations with discontinuous coefficients. ESAIM: Control Optim. Calc. Var. **8**, 621–661 (2002)
68. Dubova, A., Fernandez-Cara, E., Gonzales-Burgos, M., Zuazua, E.: On the controllability of parabolic systems with a nonlinear term involving the state and the gradient. SIAM J. Control Optim. **41**, 718–819 (2002)

69. Fattorini, H.D., Russell, D.L.: Exact controllability theorems for linear parabolic equations in one space dimension. Arch. Ration. Mech. Anal. **43**, 272–292 (1971)
70. Fernandez, L.A., Zuazua, E., Approximate controllability for the semilinear heat equation involving gradient terms. J. Optim. Theory Appl. **101**, 307–328 (1999)
71. Fernandez-Cara, E.: Null controllability of the semilinear heat equation. ESAIM: Control Optim. Calc. Var. **2**, 87–107 (1997)
72. Fernandez-Cara, E., Zuazua, E.: Null and approximate controllability for weakly blowing up semilinear heat equations. Ann. IHP. Anal. Nonlinéaire **17**(5), 583–616 (2000)
73. Fernandez-Cara, E., Guerrero, S.: Global Carleman inequalities for parabolic systems and applications to controllability. SIAM J. Control Optim. **45**, 1305–1446 (2006)
74. Fursikov, A.V.: Real processes of the 3-D Navier–Stokes systems and its feedback stabilization from the boundary. In: Agranovic, M.S., Shubin, M.A. (eds.) AMS Translations. Partial Differential Equations, M. Vishnik Seminar, pp. 95–123 (2002)
75. Fursikov, A.V.: Stabilization for the $3-D$ Navier–Stokes systems by feedback boundary control. Discr. Contin. Dyn. Syst. **10**, 289–314 (2004)
76. Fursikov, A., Imanuvilov, O.Yu.: Controllability of Evolution Equations, Lecture Notes, vol. 34. Seoul National University, Seoul (1996)
77. Gonzales-Burgos, M., Perez-Garcia, R.: Controllability to the trajectories of phase-field models by one control force. Asymptot. Anal. **46**, 123–162 (2006)
78. Guerrero, S., Imanuvilov, O.Yu.: Remarks on noncontrollability of the heat equation with memory. ESAIM: Control Optim. Calc. Var. **19**, 288–300 (2013)
79. Halanay, A., Murea, C., Safta, C.: Numerical experiment for stabilization of the heat equation by Dirichlet boundary control. Numer. Funct. Anal. Optim. **34**(12), 1317–1327 (2013)
80. Henry, D.: Geometric Theory of Semiliner Parabolic Equations, Lecture Notes Mathematics, vol. 840. Springer, Berlin (1981)
81. Imanuvilov, O.Yu., Yamamoto, M.: Carleman inequalities for parabolic equations in Sobolev spaces of negative order and exact controllability for semiliner parabolic equations. Publ. Res. Inst. Math. Sci. **39**, 227–274 (2003)
82. Kato, T.: Perturbation Theory of Linear Operators. Springer, Berlin (1966)
83. Ladyzenskaia, O.A., Solonnikov, V.A., Ural'ceva, N.N.: Linear and Quasilinear Equations of Parabolic Type. Translations Mathematical Monographs, vol. 23. American Mathematical Society, Providence (1968)
84. Lasiecka, I., Triggiani, R.: Control Theory for Partial Differential Equations Continuous and Approximation Theory. Encyclopedia of Mathematics and Its Applications. Cambridge University Press, Cambridge (2000)
85. Lebeau, G., Robbiano, L.: Contrôle exact de l'équation de la chaleur. Commun. Part. Differ. Equ. **30**, 335–357 (1995)
86. Lefter, C.: Internal feedback stabilization of nonstationary solutions to semilinear parabolic equations. J. Optim. Theory Appl. **170**(3), 960–976 (2016)
87. Le Rousseau, J., Lebeau, G.: On Carleman estimates for elliptic and parabolic operators. Applications to unique continuation and control of parabolic equations. Control Optim. Calc. Var. **18**, 712–747 (2012)
88. Le Rousseau, J., Robbiano, L.: Local and global Carleman estimates for parabolic operators with coefficients with jumps at interfaces. Invent. Math. **183**, 245–336 (2011)
89. Lions, J.L.: Quelques Méthodes de resolution des problèmes aux limites Non Linéaires. Dunod, Gauthier-Villars (1969)
90. Liu, Q.: Some results on the controllability of forward stochastic heat equations with control on drift. J. Funct. Anal. **260**, 832–851 (2011)
91. Korevaar, N.J., Lewis, J.L.: Convex solutions of certain elliptic equations have constant rank Hessians. Arch. Ration. Mech. Anal. **97**(1), 19–32 (1987)
92. Marinoschi, G.: Internal feedback stabilization of Cahn–Hilliard system with viscosity effect. Pure Appl. Funct. Anal. **3**, 107–135 (2018)
93. Micu, S., Zuazua, E.: On the lack of null controllability of the heat equation on the half-line. Trans. Am. Math. Soc. **353**, 1635–1659 (2000)

94. Micu, S., Zuazua, E.: On the lack of null controllability of the heat equation on the half-space. Part. Math. **58**, 1–24 (2001)
95. Miller, L.: Unique continuation estimates for the Laplacian and the heat equation on non-compact manifolds. Math. Res. Lett. **12**, 37–47 (2005)
96. Mizel, V.J., Seidman, T.: Observation and prediction for the heat equation. J. Math. Anal. Appl. **28**, 303–312 (1969)
97. Munteanu, I.: Normal feedback stabilization of periodic flows in a 2-D channel. J. Optim. Theory Appl. **152**, 413–438 (2012)
98. Munteanu, I.: Boundary stabilization of the phase field system by finite dimensional feedback controllers. J. Math. Anal. Appl. **412**, 964–975 (2014)
99. Munteanu, I.: Stabilization of parabolic semilinear equations. Int. J. Control **90**, 1063–1076 (2017)
100. Munteanu, I.: Boundary stabilization of a 2-D periodic MHD channel flow, by proportional feedback. ESAIM: Control Optim. Calc. Var. **23**, 1253–1266 (2017)
101. Murray, J.: Mathematical Biology, Spatial Models and Biomedical Applications. Springer, Berlin (2003)
102. Pandolfi, L.: The controllability of the Gurtin–Pipkin equation: a cosine operator approach. Appl. Math. Optim. **52**, 143–165 (2005)
103. Pandolfi, L.: Riesz systems and controllability of heat equation with memory. Integr. Equ. Oper. Theory **64**, 429–453 (2009)
104. Pazy, A.: Semigroups of Linear Operators and Applications to Partial Differential Equations. Springer, New York (1983)
105. Qin, S., Wang, G.: Controllability of impulse controlled systems of heat equations coupled by constant matrices. J. Differ. Equ. **263**(10), 6456–6493 (2017)
106. Raymond, J.P.: Feedback boundary stabilization of the two dimensional Navier–Stokes equations. SIAM J. Control Optim. **45**, 790–828 (2006)
107. Raymond, J.P.: Feedback boundary stabilization of the three dimensional Navier–Stokes e-quations. J. Math. Pures Appl. **87**, 627–669 (2007)
108. Russell, D.L.: A unified boundary controllability theory for hyperbolic and parabolic partial differential equations. Stud. Appl. Math. **52**, 189–212 (1973)
109. Russell, D.: Controllability and stabilizability theory for linear partial differential equations: recent progress and open questions. SIAM Rev. **20**(4), 639–739 (1978)
110. Sirbu, M.: Feedback null controllability of the semilinear heat equation. Differ. Integr. Equ. **15**, 115–128 (2002)
111. Smyshlyaev, A., Krstic, M.: Closed ferm boundary state feedbacks for a class of 1D partial differential equations. IEEE Trans. Autom. Control **49**, 2185–2202 (2004)
112. Tang, S., Zhang, X.: Null controllability for forward and backward stochastic parabolic equations. SIAM J. Control Optim. **48**, 2191–2216 (2009)
113. Temam, R.: Navier-Stokes Equations and Nonlinear Functional Analysis. SIAM, Philadelphia (1983)
114. Triggiani, R.: On the stabilizability problem in Banach spaces. J. Math. Anal. Appl. **52**(3), 383–403 (1975)
115. Triggiani, R.: Boundary feedback stabilization of parabolic equations. Appl. Math. Optim. **6**, 2185–2202 (1980)
116. Tucsnak, M., Weiss, G.: Observations and Control for Operator Semigroups. Birkhäuser, Basel (2009)
117. Vazquez, R., Krstic, M.: A closed-form feedback controller for stabilization of linearized Navier–Stokes equations: the 2D Poisseuille flow. IEEE Trans. Autom. (2005). https://doi.org/10.1109/CDC.2005.1583349
118. Vazquez, R., Tvelat, E., Coron, J.M.: Control for fast and stable Laminar-to-High-Reynolds-Number transfer in a 2D channel flow. Discr. Contin. Dyn. Syst. Ser. B **10**(4), 925–956 (2008)
119. Wang, G.: L^{∞}-controllability for the heat equation and its consequence for the time optimal control problems. SIAM J. Control Optim. **47**, 1701–1720 (2008)

120. Zhang, X.: A unified controllability and observability theory for some stochastic and deterministic partial differential equations. In: Proceedings of the International Congress of Mathematicians, Hyderabad, pp. 3008–3033 (2010)
121. Zuazua, E.: Finite dimensional null controllability of the semilinear heat equations. J. Math. Pures Appl. **76**, 237–264 (1997)
122. Zuazua, E.: Approximate controllability for semilinear heat equation with globally Lipschitz nonlinearities. Control. Cybern. **28**, 665–683 (1999)

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