

CV Giuseppe Mulone

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General Info

- Name: **Giuseppe Mulone**
- Date and place of birth:
- Address:
- E-mail: giuseppe.mulone@unict.it
- Home Page: <http://www.dmi.unict.it/~mulone/>
- Nationality: ~ ~

Education

- Master (Degree) *in Mathematics, summa cum laude*, University of Catania, July 11th, 1973.

Distinctions, Awards:

2008: Elected Member of the Accademia Zelantea di Acireale

2015: Elected Member of the Accademia Peloritana dei Pericolanti di Messina

2014: Elected Member of the Accademia Gioienia di Catania

2017: Member of the Executive Committee of ISIMM.

Google Scholar Citations

<https://scholar.google.it/citations?user=i85f6agAAAAJ>

Positions

- **C.N.R. Grant in Mathematical Physics** at Seminario Matematico of Catania University, October 1st, 1973 – October 31st, 1974
- Winner of a competition for a “**Contratto quadriennale di Ricerca**” of Mathematics, University of Catania, December 21st, 1978 – December 18th, 1981 at *Cattedra di Meccanica Razionale della Facoltà di Scienze Matematiche Fisiche e Naturali*.
- “**Professore Incaricato**” of Calculus II, at Engineering Faculty of University of Catania, December 21st, 1978 – December 18th, 1981.
- “**Professore Incaricato**” of Mathematics, at Natural Science Faculty of University of Catania, December 21st, 1978 – December 18th, 1986.
- **Researcher MAT/07** (Mathematical Physics), University of Catania, December 19th, 1981 – January 28th, 1986.
- **Associate Professor MAT/07** (Mathematical Physics), University of Catania, January 29th, 1986 – October 31st, 1994.
- **Professor MAT/07** (Mathematical Physics), University Federico II, Naples, November 1st, 1994. – October 31st, 1996.
- **Professor MAT/07** (Mathematical Physics), University of Catania, from November 1st, 1996.
- **Chair of Department of Mathematics and Computer Sciences**, University of Catania, since November 1st, 2008 to 31 October 2015
- **Elected member of *Senato Accademico* of the University of Catania**, since June 2012 to 31 October 2015
- Member of the **Administrative Board of the University of Catania** since 2017.
- Member of the Editorial board of *Ricerche di Matematica* (Springer) since 2016.

Teaching activity of the last years

- Professor of *Istituzioni di Fisica Matematica CdL Matematica Magistrale*
- Professor of *Sistemi dinamici CdL Matematica*

Society

I.S.I.M.M. (International Society for the Interaction of Mechanics and Mathematics)

G.N.F.M. (Gruppo Nazionale Fisica Matematica)

U.M.I. (Unione Matematica Italiana)

(Some) Organizing Activity

- Chair of the Organizing Committee and Member the Scientific Committee of the International Workshop *Waves and Stability in Continuous Media (WASCOM)*, Acireale - Catania, September 1995.
- Chair of the Organizing Committee and Co-Chair of the Scientific Committee of the International Workshop *Waves and Stability in Continuous Media (WASCOM)*, Acireale - Catania, September 2005.
- Chair of the Organizing Committee and Co-Chair of the Scientific Committee of the International Workshop *Fifth China-Italy Colloquium on Applied Mathematics*, Acireale, September 27–30, 2010.

Other Scientific Activities

- He has participated in *more than 60* International and National Meetings and Workshops. In many of them he has been Invited Speaker.
- Professor of the course on *Qualitative analysis in fluid dynamics* at the XXIII Summer School of Mathematical Physics in Ravello, Italy (September 1998).
- He has visited and gave seminars at Southwest Normal University Chongqing (October, 2002, October, 2004, September 2006, October 2008)
- He has visited and gave seminars at Durham University, UK (September, 2001, October, 2006)
- He has been Member of the Editorial Board of *Ricerche di Matematica* and *Le Matematiche*
- *Referee* for many journals (among the others: Proc. Roy Soc London A, J. Math. Anal. Appl., Nonlinear Analysis, Int. J. Eng. Science, Math. Meth. Appl. Sci., Appl. Anal., Continuum Mech. and Thermodyn., Acta Mechanica, Mechanics Research Communications, etc.)
- He has attended to many selection boards for Ordinario, Associato and Ricercatore Positions in Italy in the Scientific Group of Mathematical Physics.

Research Projects

- Coordinator of Local research Project (PRA) on *Qualitative analysis and stability in Fluid dynamics, Qualitative analysis and stability in Fluid dynamics, Thermodynamics and Biomathematics* (1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008).
- Local Coordinator of a PRIN Project 2000 Coordinator Prof. Ruggeri *Non Linear Mathematical Problems of Wave Propagation and Stability in Models of Continuous Media*
- Local Coordinator of a PRIN Project 2003 Coordinator Prof. Ruggeri *Nonlinear Mathematical Problems of Wave Propagation and Stability in Models of Continuous Media*
- Local Coordinator of a PRIN Project 2005 Coordinator Prof. Ruggeri *Nonlinear Propagation and Stability in Thermodynamical Processes of Continuous Media*
- Principal Investigator of FIR 2014, University of Catania: *Continuum mechanics, qualitative analysis for dissipative systems, classical and quantum extended thermodynamics*

Research Activity

- Continuum mechanics: fluid dynamics and magnetofluid dynamics
- Bénard problems, convective instability
- Qualitative analysis and stability, optimal Lyapunov functions
- Flows in porous media
- Dynamical systems: autonomous and non-autonomous systems
- Mathematical models for biology, epidemic models
- Partial Differential Equations of parabolic type (reaction-diffusion equations), parabolic-hyperbolic equations
- Navier-Stokes systems

References

- [1] P Falsaperla, A Giacobbe G Mulone, *2019* Inclined convection in a porous Brinkman layer: linear instability and nonlinear stability, *Proc. R. Soc. A* 20180614. <http://dx.doi.org/10.1098/rspa.2018.0614>
- [2] P Falsaperla, A Giacobbe, G Mulone *2018* Nonlinear stability results for plane Couette and Poiseuille flows *arXiv preprint arXiv:1807.07441* (submitted).
- [3] B Buonomo, A Giacobbe, G Mulone *2018* Analysis of an epidemic model with peer-pressure and information-dependent transmission with high-order distributed delay, *Ricerche di Matematica*, 1-16
- [4] A Giacobbe, G Mulone, *2018* Stability of ordered equilibria *Journal of Mathematical Analysis and Applications* 462 (2), 1298-1308
- [5] Falsaperla P., Mulone G., *2018* Thermal convection in an inclined porous layer with Brinkman law. *Ric. Mat.* p. 1-17, ISSN: 0035-5038, doi: 10.1007/s11587-018-0371-2
- [6] Falsaperla P., Giacobbe A., Lombardo S., Mulone G. *2017* Stability of hydromagnetic laminar flows in an inclined heated layer. *Ric. Mat.* vol. 66, p. 125-140, ISSN: 1827-3491, doi: 10.1007/s11587-016-0290-z
- [7] Falsaperla P., Giacobbe A., Mulone G. *2017* On the hydrodynamic and magnetohydrodynamic stability of an inclined layer heated from below. *Atti Acc. Naz. Lincei. Ren. Lincei. Matematica e Applicazioni*, vol. 28, p. 515-534, ISSN: 1120-6330, doi: 10.4171/RLM/774
- [8] Giacobbe A., Mulone G., Straughan B., Wang W. *2017* Modelling drinking with information. *Math. Meth. Appl. Sciences*, vol. 40, p. 4400-4411, ISSN: 1099-1476, doi: 10.1002/mma.4312
- [9] Falsaperla P, Mulone G, Straughan B. *2016* Bidispersive inclined convection. *Proc. Roy. Soc. London A*, vol. 472, ISSN: 1364-5021, doi: <http://dx.doi.org/10.1098/rspa.2016.0480>
- [10] P. Falsaperla, A. Giacobbe, S. Lombardo, G. Mulone, *2016* Stability of hydromagnetic laminar flows in an inclined heated layer, *Ricerche Mat.* DOI 10.1007/s11587-016-0290-z
- [11] P. Falsaperla, A. Giacobbe, S. Lombardo, G. Mulone, *2016* Laminar hydromagnetic flows in an inclined heated layer, *AAPP, Atti della Accademia Peloritana dei Pericolanti* DOI: 10.1478/AAPP.941A5, Vol. 94, No. 1, A5-1 – A5-15.

- [12] C. Ciarcià, A. Giacobbe, P. Falsaperla, G. Mulone 2015 A mathematical model of anorexia and bulimia, *Mathematical Methods in the Applied Sciences*, Vol. 38, Issue 14, pages 2937–2952, DOI: 10.1002/mma.3270
- [13] S. Lombardo, G. Mulone 2014 Induction magnetic stability with a two-component velocity field, *Mechanics Research Communications* Vol. 62, pages 89–93, doi:10.1016/j.mechrescom.2014.09.006
- [14] Giacobbe, G. Mulone 2014 Stability in the Rotating Bnard Problem and Its Optimal Lyapunov Functions, *Acta Applicandae Mathematicae*, vol. 132, Issue 1, pp.307-320, doi:10.1007/s10440-014-9905-0.
- [15] P. Falsaperla, A. Giacobbe, G. Mulone 2013 Some results in the nonlinear stability for rotating Bnard problem with rigid boundary condition. *Atti Dell'Accademia Peloritana Dei Pericolanti*, vol. 91, p. A9-1-A9-10, ISSN: 1828-6550, doi: 10.1478/AAPP.91S1A9
- [16] P. Falsaperla, A. Giacobbe and G. Mulone 2012 Double diffusion in rotating porous media under general boundary conditions . *International Journal Of Heat And Mass Transfer*, vol. 55, p. 2412-2419, ISSN: 0017-9310, doi: 10.1016/j.ijheatmasstransfer.2011.12.035
- [17] Falsaperla P, Giacobbe A, Mulone G 2012 Does symmetry of the operator of a dynamical system help stability?. *Acta Applicandae Mathematicae*, vol. 122, p. 239-253, ISSN: 0167-8019, doi: 10.1007/s10440-012-9740-0
- [18] G. Mulone and B. Straughan 2012 Modelling binge drinking. *Int J. of Biomathematics*, vol. 5, p. 1250005-1-1250005-14, doi:10.1142/S1793524511001453.
- [19] W. Wang and G. Mulone 2011 Global analysis of a stage-structured model with population diffusion. *Applicable Analysis* Vol. 90, Issue 1, pp. 253-261. doi:10.1080/00036811003735915.
- [20] P. Falsaperla, G. Mulone and B. Straughan 2011 Inertia effects on rotating porous convection. *Int. J. Heat Mass Transfer*, Vol. 54, pp. 1352-1359. doi:10.1016/j.ijheatmasstransfer.2010.12.006.
- [21] P. Falsaperla, G. Mulone and B. Straughan 2010 Rotating porous convection with inertial effects and prescribed heat flux. *Int. J. Eng. Science* Vol. 48 n.7-8, pp. 685-692. doi:10.1016/j.ijengsci.2010.02.005.
- [22] G. Mulone, S. Rionero and W. Wang 2010 The effect of density-dependent dispersal on the stability of populations *Nonlinear Analysis*, Vol. 74, pp. 4831-4846. doi:10.1016/j.na.2011.04.055.

- [23] P. Falsaperla, G. Mulone and B. Straughan 2010 Rotating porous convection with prescribed heat flux, *Int. J. Eng. Science*, Vol. 48 n.7-8, pp. 685-692. doi:10.1016/j.ijengsci.2010.02.005.
- [24] P. Falsaperla and G. Mulone 2010 Stability in the rotating Bénard problem with Newton-Robin and fixed heat flux boundary conditions , *Mech. Res. Com.*, **37**, 122–128 DOI:10.1016/j.mechrescom.2009.11.002.
- [25] G. Mulone and B. Straughan 2009 A note on heroin epidemics *Math. Biosc.*, **218**, 138–141. DOI:10.1016/j.mbs.2009.01.006.
- [26] G. Mulone and B. Straughan 2009 Nonlinear stability for diffusion models in biology, *SIAM J. Appl. Math.* **69**/6, 1739–1758. DOI:10.1137/070697884.
- [27] G. Mulone and V.A. Solonnikov 2009 Linearization principle for a system of equations of mixed type. *Nonlinear Anal. Theory, Methods & Applications*, **71**, 1019-1031. DOI: 10.1016/j.na.2008.11.023
- [28] S. Lombardo, G. Mulone and M. Trovato 2008 Nonlinear stability in reaction-diffusion systems via optimal Lyapunov functions *J. Math. Anal. Appl.* **342** n. 1, 461–476. DOI:10.1016/j.jmaa.2007.12.024.
- [29] G. Mulone, B. Straughan and W. Wang 2007 Stability of Epidemic Models with Evolution *Stud. Appl. Math.*, **118**, 117–132. DOI:10.1111/j.1467-9590.2007.00367.x
- [30] S. Lombardo, G. Mulone and M. Trovato 2006 A general analytical procedure to obtain optimal Lyapunov functions in reaction-diffusion systems, *Rend. Circolo Mat. Palermo*, ser. II, Suppl. **78**, 173–185.
- [31] W. Wang, P. Fergola, S. Lombardo and G. Mulone 2006 Mathematical models of innovation diffusion with stage structure, *Appl. Math. Modelling*, **30**, 129–146 DOI:10.1016/j.apm.2005.03.011
- [32] G. Mulone and B. Straughan 2006 An operative method to obtain necessary and sufficient stability conditions for double diffusive convection in porous media, *ZAMM* **86**, n. 7, p. 507–520. DOI:10.1002/zamm.200510272
- [33] R. Kaiser and G. Mulone 2005 A note on nonlinear stability of plane parallel shear flows, *J. Math. Anal. Appl.* **302**, n.2, 543–556. DOI:10.1016/j.jmaa.2004.08.025
- [34] S. Lombardo and G. Mulone 2005 Necessary and Sufficient Stability Conditions via the Eigenvalues - Eigenvectors Method: an Application to the Magnetic Bénard Problem, *Nonlinear, Anal.* **63** /5-7, e2091-e2101. DOI:10.1016/j.na.2004.09.003

- [35] G. Mulone 2004 Stabilizing effects in dynamical systems: linear and nonlinear stability conditions, *Far East J. Appl. Math.* **15**, n.2, 117–134.
- [36] W. Wang, G. Mulone 2003 Threshold of Disease Transmission in a Patch Environment, *J. Mat. Anal. Appl.*, **285**, 321-335. DOI:10.1016/S0022-247X(03)00428-1
- [37] G. Mulone and S. Rionero 2003 Necessary and sufficient conditions in the magnetic Bénard problem, *Arch. Rational Mech. Anal.* **166** no. 3, 197–218. DOI 10.1007/s00205-002-0230-9
- [38] S. Lombardo, G. Mulone 2003 Nonlinear stability and convection for laminar flows in a porous medium with Brinkman law, *Math. Met. Appl. Sci.* **26**, no. 6, 453–462. DOI: 10.1002/mma.333
- [39] S. Lombardo, G. Mulone 2002 Necessary and sufficient conditions of global nonlinear stability for rotating double-diffusive convection in a porous medium *Continuum Mech. Thermodyn.*, **14**, 527–540. DOI:10.1007/s001610200091
- [40] S. Lombardo, G. Mulone, and B. Straughan 2001 Nonlinear stability in the Bénard problem for a double-diffusive mixture in a porous medium, *Math. Met. Appl. Sci.*, **24**, N.16, 1229–1246. DOI: 10.1002/mma.263
- [41] S. Lombardo, G. Mulone and S. Rionero 2001 Global nonlinear exponential stability of the conduction-diffusion solution for Schmidt numbers greater than Prandtl numbers, *J. Mat. Anal. Appl.* , **262**, n.1, 191–207. DOI:10.1006/jmaa.2001.7556
- [42] W. Wang, G. Mulone, F. Salemi and V. Salone 2001 Permanence and stability of a stage-structured predator-prey model, *J. Mat. Anal. Appl.*, **262**, n.2, 499-528. DOI:10.1006/jmaa.2001.7543
- [43] W. Wang, G. Mulone, F. Salemi and V. Salone 2001 Global stability of discrete population models with time delays and fluctuating environment, *J. Mat. Anal. Appl.*, **264**, n.1, 147–167. DOI:10.1006/jmaa.2001.7666
- [44] S. Lombardo, G. Mulone and S. Rionero 2000 Global stability in the Bénard problem for a mixture with superimposed plane parallel shear flows, *Math Meth. Appl. Sci.*, **23**, n.16, 1447-1465. DOI:10.1002/1099-1476
- [45] G. Mulone and S. Rionero 1998 Unconditional nonlinear exponential stability in the Bénard problem for a mixture: necessary and sufficient conditions, *Rend. Mat. Acc. Lincei*, s.9, **9**, 221–236.

- [46] G. Mulone 1998 On the nonlinear stability of the Bénard problem for a mixture: conditional and unconditional stability, *Rend. Circ. Mat. Palermo*, Ser. II, Suppl. **57**, 347–356.
- [47] G. Mulone, F. Salemi and W. Wang 1998 Permanence of Population Models with Toxicant Input and Diffusion, *Bull. Biomath.*, **1**, n. 4, 16–29.
- [48] G. Mulone and S. Rionero 1997 The rotating Bénard problem: new stability results for any Prandtl and Taylor numbers, *Continuum Mech. Thermodyn.*, **9** 347–363. DOI:10.1007/s001610050076
- [49] G. Mulone and S. Rionero 1996 Some recent results on the onset of convection, *Rend. Circ. Mat. Palermo*, ser. II, suppl. **45**, 465–476.
- [50] G. Mulone, S. Rionero and B. Straughan 1996 Unconditional nonlinear stability in a polarized dielectric liquid *Rend. Acc. Lincei*, s. 9, **7**, n.4, 241–252.
- [51] G. Mulone and V.A. Solonnikov 1995 On an initial boundary-value problem for equations of magnetohydrodynamics with the Hall and ion-slip effects, *Zapiski. Nauchn. Semin. Pomi*, **221**, 167–184.
- [52] G. Mulone 1994 On the Nonlinear Stability of a Fluid Layer of a Mixture Heated and Salted from Below, *Continuum Mech. Thermodyn.* **6**, 161–184.
- [53] G. Mulone and S. Rionero 1993 On the nonlinear stability of the magnetic Bénard problem with rotation, *Z. Angew. Math. Mech.* , **73** 1, 35–45.
- [54] G. Mulone, S. Rionero and B. Straughan 1992 Continuous Dependence on Modelling for an improperly posed problem for the equations of magnetohydrodynamics, *Ricerche di Matematiche*, **41**, suppl. 197–207.
- [55] G. Mulone and F. Salemi 1992 On the Nonlinear Stability of Laminar Flow between Parallel Planes in the Presence of a Coplanar Magnetic Field, *Ricerche di Matematiche*, **41**, suppl. 209–225.
- [56] G. Mulone 1991 On the stability of plane parallel convective flow, *Acta Mechanica* **87**, 153–162.
- [57] S. Rionero, G. Mulone and F. Salemi 1991 Eds. of the VI International Conference on Waves and Stability in Continuous Media. Proceedings of the conference held in Acireale, May 27–June 1, 1991. *Le Matematiche* (Catania) **46**, no. 1. Dipartimento di Matematica dell’Università di Catania, Catania, 1991. pp. 1–526.
- [58] S. Rionero and G. Mulone 1991 On the nonlinear stability of parallel shear flows, *Continuum Mech. Thermodyn.* **3**, 1–11.

- [59] S. Rionero and G. Mulone 1989 On the stability of a mixture in a rotating layer via the Lyapunov second method, *Z. angew. Math. Mech.*, **69**, 441–446.
- [60] G. Mulone and S. Rionero 1989 On the non-linear stability of the rotating Bénard problem via the Lyapunov direct method, *J. Mat. Anal. Appl.*, **144**, 109–127.
- [61] S. Rionero and G. Mulone 1988 On a maximum problem governing the non linear stability of rotating Bénard problem, *Ricerche Mat.*, **37**, 177–185.
- [62] S. Rionero and G. Mulone 1988 A nonlinear stability analysis of the magnetic Bénard problem through the Lyapunov direct method *Arch. Rational Mech. Anal.*, **103**, 347–368.
- [63] S. Rionero and G. Mulone 1988 Existence and uniqueness theorems for a steady thermo-diffusive mixture in a mixed problem, *Nonlinear Analysis* **12** (No. 5), 473–494.
- [64] S. Rionero and G. Mulone 1987 On the non-linear stability of a thermo-diffusive fluid mixture in a mixed problem, *J. Mat. Anal. App.* **124**, 165–188.
- [65] G. Mulone and F. Salemi 1985 On the hydrodynamic motion in a domain with mixed boundary conditions: Existence, uniqueness, stability and linearization principle, *Ann. Mat. Pura App.* **139**, 147–174.
- [66] G. Mulone and F. Salemi 1983 On the existence of hydrodynamic motion in a domain with free boundary type conditions, *Meccanica*, **18**, 136–144.
- [67] A.M. Anile, G. Mulone and S. Pluchino 1980 Critical time for asymptotic acoustic waves in a gravitational atmosphere, *Wave motion*, **2**, 267–275.
- [68] A.M. Anile, G. Mulone and S. Pluchino 1979 Critical time for shock formation in radiative magnetogasdynamics, *Wave motion*, **1**, 163–175.