Curriculum Vitae

Andrea Braides

as of December 2020

Born in Udine (Italy) on April 12, 1961

Present position: full professor of Mathematical Analysis at the University of Rome 'Tor Vergata' (since 2000)

Previous positions: 1995-2000 associate professor at SISSA, Trieste
1992-95 associate professor at the University of Brescia
1988-92 research associate at the University of Brescia
1985-86 contract professor of Mathematical Analysis at the University of Udine

Education: 1979-83; Degree in Mathematics at the University of Pisa and Diploma at the Scuola Normale Superiore of Pisa (supervisor: E. De Giorgi)
1983-85: PhD studies at the Scuola Normale Superiore (supervisor: E. De Giorgi)
1990-91: post-doc position at Heriot-Watt University (coordinator: JM Ball)

Other academic positions
2001-2015: member of the PhD directing committee of the 'Dottorato in Modelli e Metodi Matematici per la Tecnologia e la Società', Università di Roma 'La Sapienza'
2003/04: local coordinator of the research project 'Calculus of variations' (national coordinator L. Ambrosio, SNS, Pisa)
2004/08: member of the Steering Committee of the European Community project MULTIMAT (coordinator D. Schryvers)
2006/08: local coordinator of the research project 'Variational Problems with Multiple Scales' (national coordinator G. Dal Maso, SISSA, Trieste)
2009/12: local coordinator of the research project 'Variational Problems with Multiple Scales' (national coordinator G. Dal Maso, SISSA, Trieste)
2013/16: local coordinator of the research project 'Calculus of Variations' (national coordinator G. Dal Maso, SISSA, Trieste)
2015- present: member of the PhD directing committee of the 'Dottorato in Matematica', Università di Roma 'Tor Vergata'

2016-2022: director of the PhD committee of the 'Dottorato in Matematica', Università di Roma 'Tor Vergata'

2017/20: member of the project PRIN 'Calculus of Variations' (PI: L. Ambrosio, SNS, Pisa)

2019/22: member of the project PRIN 'Variational methods for stationary and evolution problems with singularities and interfaces' (PI: G. Dal Maso, SISSA)

Distinguished visiting positions, invited lectures, honours

1998, Jan-May. Marie-Curie Scholarship at the Max-Planck Institüt, Leipzig

2002. Invited Distinguished Professorship, Paris XIII

2004. Timoshenko Fellowship, Stanford

2013. Plenary Speaker at GAMM Conference, Novi Sad

2013-14. One-year Visiting Professorship at the Mathematical Institute and Fellowship at Mansfield College, Oxford, UK

2014. Invited Sectional Speaker at the International Congress of Mathematicians ICM 2014, Seoul

2015 (Jan-Mar) John Von Neumann Visiting Professorship at Technische Universität München

2015 Tullio Levi Civita Prize

Research interests

My scientific research has been mainly devoted to the following fields

-General theory of Γ-convergence

-Γ-convergence for functionals of the calculus of variations

-Passage from discrete to continuum variational theories

-Semicontinuity and relaxation for integral functionals

-Homogenization

-Quasilinear elliptic equations

-Free-discontinuity problems

-Sets of finite perimeter

-Fracture Mechanics

-Variational theory of computer vision

-Relaxed Dirichlet problems

-Mathematical theory of thin structures

-Percolation

Published works (in order of writing)

1. A. Braides. Omogeneizzazione di integrali non coercivi. *Ricerche Mat.* **32** (1983), 347-368.

2. A. Braides. Omogeneizzazione quasi periodica. *Atti del convegno "Equazioni Differenziali e Calcolo delle Variazioni, Pisa 1985" (editor, L. Modica)*, Pisa, 1986.

3. A. Braides. Homogenization of some almost periodic functional. *Rend. Accad. Naz. Sci. XL* **103**, IX (1985), 313-322.

4. A. Braides. Omogeneizzazione di funzionali debolmente quasi periodici. *Atti Acc. Lincei Rend. fis.* **8**, LXXXI (1987), 29-33.

5. A. Braides. A homogenization theorem for weakly almost periodic functionals. *Rend. Accad. Naz. Sci. XL* **104**, X (1986), 261-281.

6. A. Braides. Relaxation of functionals with constraint on the divergence. *Ann. Univ. Ferrara* **33** (1987), 157-177.

7. L. Ambrosio and A. Braides. Functionals defined on partitions of sets of finite perimeter, I: integral representation and Γ-convergence. *J. Math. Pures. Appl.* **69** (1990), 285-305.

8. L. Ambrosio and A. Braides. Functionals defined on partitions of sets of finite perimeter, II: semicontinuity, relaxation and homogenization. *J. Math. Pures. Appl.* **69** (1990), 307-333.

9. A. Braides and P. D'Ancona. An example of a perimeter functional defined on a fractal set. *Pubbl. Dip. Mat. Univ. Pisa*, 1989.

10. A. Braides. Reiterated homogenization of integral functionals. Quaderno del Seminario Matematico di Brescia n.14/90, Brescia, 1990.

11. A. Braides, V. Chiadò Piat and A. Defranceschi. Homogenization of almost periodic monotone operators. *Ann. Inst. H. Poincaré, Anal. Non Linéaire* **9** (1992), 399–432.

12. A. Braides. Correctors for the homogenization of almost periodic monotone operators. *Asymptotic Analysis* **5** (1991), 47–74.

13. A. Braides and P. D'Ancona. Perimeter on fractal sets. *Manuscripta Mathematica* **72** (1991), 5–25.

14. A. Braides. Almost periodic methods in the theory of homogenization. *Applicable Anal.* **47** (1992), 259–277.

15. A. Braides and V. Chiadò Piat. Remarks on the homogenization of connected media. *Nonlinear Anal.* **22** (1994), 391–407.

16. A. Braides and V. De Cicco. Relaxation and Γ-convergence of quadratic forms in BV(I; $\mathbb{R}^n$). *Ann. Univ. Ferrara* **38** (1993), 145–175.

17. A. Braides and A. Coscia. A singular perturbation approach to problems in fracture mechanics. *Math. Mod. Meth. Appl. Sci.* **3** (1993), 303–340.

18. A. Braides and L. Notarantonio. Fractal relaxed Dirichlet problems. *Manuscripta Math.* **81** (1993) 41–56.

19. A. Braides. The Lavrentiev phenomenon for free discontinuity problems. *J. Funct. Anal.* **127** (1995), 1–20.

20. A. Braides and A. Coscia. The interaction between bulk energy and surface energy in multiple integrals, *Proc. Roy. Soc. Edinburgh Sect. A* **124** (1994), 737–756.

21. G. Bouchittè, A. Braides and G. Buttazzo. Relaxation of some free discontinuity problems. *J. Reine Angew. Math.* **458** (1995), 1–18.

22. A. Braides. Lower semicontinuity conditions for functionals on jumps and creases. *SIAM J. Math Anal.* **26** (1995), 1184–1198.

23. A. Braides and V. De Cicco. New lower semicontinuity results for functionals defined on $BV(\Omega)$. *Adv. Math. Sci. Appl.* **6** (1996), 1–30.

24. A. Braides. Homogenization of bulk and surface energies. *Boll. Un. Mat. It.* **9-B** (1995), 375–398.

25. A. Braides. Loss of polyconvexity by homogenization. *Arch. Rational Mech. Anal.* **127** (1994), 183–190.

26. A. Braides and A. Coscia. On the bending of a rod: a singular perturbation approach. *Adv. Math. Sci. Appl.* **8** (1998), 461–482.

27. A. Braides, A. Defranceschi and E. Vitali. A relaxation approach to Hencky's plasticity. *Appl. Math. Optim.* **35** (1997), 45–68.

28. A. Braides and V. Chiadò Piat. A derivation formula for convex integral functionals on $BV(\Omega)$. *J. Convex Anal.* **2** (1995), 69–85.

29. A. Braides and A. Malusa. Approximation of relaxed Dirichlet problems. *Calculus of Variations, Homogenization and Continuum Mechanics* (G. Bouchittè, G. Buttazzo, P.Souquet, eds.), World Scientific, Singapore, 1994, 83–97.

30. A. Braides. *An Introduction to Homogenization and Γ-convergence.* In: G. Allaire, A. Braides, G. Buttazzo, A. Defranceschi, L.V. Gibiansky. *School on Homogenization. Lecture Notes of the Courses held at ICTP, Trieste, 4–17 September 1993.* Preprint SISSA, 1993, 43–80.

31. A. Braides and A. Garroni. Homogenization of periodic nonlinear media with soft and stiff inclusions. *Math. Meth. Mod. Appl. Sci.* **5** (1995), 543–564

32. A. Braides. *Semicontinuity, Γ-convergence and Homogenization for Multiple Integrals.* Lecture Notes, SISSA, Trieste, 1994, 1–124.

33. M. Amar and A. Braides. A characterization of variational convergence for segmentation problems. *Discrete and Continuous Dynamical Systems* **1** (1995) 347–369.

34. A. Braides and V. Chiadò Piat. Integral representation results for functionals defined in $SBV(\Omega; \mathbb{R}^m)$. *J. Math. Pures Appl.* **75** (1996), 595–626.

35. A. Braides, A. Defranceschi and E. Vitali. Homogenization of free discontinuity problems. *Arch. Rational Mech. Anal.* **135** (1996), 297–356.

36. L. Ambrosio, A. Braides and A. Garroni. Special functions with bounded variation and with weakly differentiable traces on the jump set. *Nonlinear Diff. Equations Appl.* **5** (1998), 219–243

37. L. Ambrosio and A. Braides. Energies in SBV and variational models in fracture mechanics. In *Homogenization and Applications to Material Sciences*, (D. Cioranescu, A. Damlamian, P. Donato eds.), GAKUTO, Gakkōtosho, Tokio, Japan, 1997, p. 1–22.

38. L. Ambrosio, A. Braides and A. Garroni. Free discontinuity problems. *Proceedings of the Conference"Nonlinear Differential Equations", Kiev, 1995*, in *Nonlinear Boundary Value Problems* **7** (1997), 3–12.

39. M. Amar and A. Braides. Γ-convergence of non-convex functionals defined on measures. *Nonlinear Anal. TMA* **34** (1998), 953–978.

40. A. Braides and G. Dal Maso. Non-local approximation of the Mumford-Shah functional. *Calc. Var. PDE* **5** (1997), 293–322.

41. A. Braides and D. Lukkassen. Reiterated homogenization of integral functionals. *Math. Mod. Meth. Appl. Sci.* **10** (2000), 47–71.

42. A. Braides. Free discontinuity problems and their non-local approximation, in: "L. Ambrosio and N. Dancer. *Calculus of Variations and Partial Differential Equations*, Springer Verlag, Berlin, 1999", 171–180.

43. R. Alicandro, A. Braides and M.S. Gelli. Free-discontinuity problems generated by singular perturbation. *Proc. Roy. Soc. Edinburgh Sect. A* **128**, (1998), 1115–1129.

44. A. Braides and A. Garroni. On the non-local approximation of free-discontinuity problems. *Comm. Part. Diff. Equat.* **23** (1998), 817–829.

45. N. Ansini, A. Braides and V. Chiadò Piat. Homogenization of periodic multidimensional structures. *Boll. Un. Mat. Ital.*, **2-B** (1999), 735–758.

46. A. Braides, G. Dal Maso and A. Garroni. Variational formulation of softening phenomena in fracture mechanics: the one-dimensional case. *Arch. Rational Mech. Anal.* **146** (1999), 23–58.

47. R. Alicandro, A. Braides and J. Shah. Free-discontinuity problems via functionals involving the L^1-norm of the gradient and their approximation. *Interfaces and Free Boundaries* **1** (1999), 17–37.

48. E. Acerbi and A. Braides. Approximation of free-discontinuity problems by elliptic functionals via Γ-convergence. *Asymptotic Anal.* **21** (1999), 317–329.

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50. A. Braides and I. Fonseca. Brittle thin films. *Appl. Math. Optim.* **44** (2001), 299–323.

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52. A. Braides and M.S. Gelli. Continuum limits of discrete systems without convexity hypotheses. *Math. Mech. Solids* **7** (2002), 41–66.

53. N. Ansini and A. Braides. Homogenization of oscillating boundaries and applications to thin films. *J. Analyse Math.* **83** (2001), 151–182

54. A. Braides. Non-local variational limits of discrete systems. *Communications in Contemporary Mathematics* **2** (2000), 285–297

55. A. Braides, I Fonseca and G. Francfort. 3D-2D asymptotic analysis for inhomogeneous thin films. *Indiana Univ. Math. J.* **49** (2000), 1367–1404

56. A. Braides, I. Fonseca and G. Leoni. A-quasiconvexity: relaxation and homogenization. *ESAIM Control Optim. Calc. Var.* **5** (2000), 539–577

57. N. Ansini and A. Braides. Separation of scales and almost-periodic effects in the asymptotic behaviour of perforated periodic media. *Acta Applicandae Math.* **65** (2001), 59–81

58. N. Ansini and A. Braides. Asymptotic analysis of periodically-perforated nonlinear media. *J. Math. Pures Appl.* **81** (2002), 439–451

59. A. Braides and M.S. Gelli. From Discrete to Continuum: a Variational Approach. Lecture Notes. SISSA, Trieste, 2000.

60. A. Braides, A. Defranceschi and E. Vitali. Relaxation of elastic energies with free discontinuities and constraints on the strain. *Ann Scuola Norm Sup. Pisa (V)* **1** (2002), 275–317.

61. A. Braides. Discrete approximation of functionals with jumps and creases, in *Homogenization 2001. Proceedings of the First HMS2000 International School and Conference on Homogenization*, GAKUTO Internat. Ser. Math. Sci. Appl. **18**, Gakkōtosho, Tokyo (2003), 147–154

62. A. Braides, G. Buttazzo and I. Fragalà. Riemannian approximation of Finsler metrics. *Asympt. Anal.* **31** (2002), 177–187

63. N. Ansini, A. Braides and V. Chiadò Piat. Interaction between homogenization and phase-transition processes. *Proceeding of the Steklov Inst.of Math.* **236** (2002), 373–385

64. A. Braides, M.S. Gelli and M. Sigalotti. The passage from non-convex discrete systems to variational problems in Sobolev spaces: the one-dimensional case. *Proceeding of the Steklov Inst.of Math.* **236** (2002), 395-414

65. A. Braides and A. Malchiodi, Curvature theory of boundary phases: the two-dimensional case. *Interfaces Free Boundaries* **4** (2002), 345-370

66. N. Ansini, A. Braides and V. Chiadò Piat, Gradient theory of phase transitions in inhomogeneous media. *Proc. Roy. Soc. Edin. A*, **133** (2003), 265–296

67. A. Braides, *From discrete to continuous variational problems: an introduction.* Lecture Notes. School on Homogenization Techniques and Asymptotic Methods for Problems with Multiple Scales. Torino, September 2001.

68. G. Bellettini, A. Braides and G. Riey, Variational approximation of anisotropic functionals on partitions. *Ann. Mat. Pura Appl.* **184** (2005), 75–93

69. A. Braides and G. Francfort, Bounds on the effective behavior of a square conducting lattice. *R. Soc. Lond. Proc. Ser. A Math. Phys. Eng. Sci.* **460** (2004), 1755–1769

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72. R. Alicandro, A. Braides and M. Cicalese L^∞ energies on discontinuous functions. *Discrete Cont. Dyn. Sist.*, **12** (2005), 905–928

73. A. Braides and A. Piatnitski. Overall properties of a discrete membrane with randomly distributed defects. *Arch. Ration. Mech. Anal.*, **189** (2008), 301–323

74. A. Braides and R. March Approximation by Γ-convergence of a curvature-depending functional in Visual Reconstruction. *Comm. Pure Appl. Math.* **58** (2006), 71–121

75. A. Braides and M.Cicalese. Surface energies in nonconvex discrete systems. *Math. Mod. Meth. Appl. Sci.* **17** (2007) 985-1037

76. A. Braides, A.J. Lew and M. Ortiz. Effective cohesive behavior of layers of interatomic planes. *Arch. Ration. Mech. Anal.* **180** (2006), 151–182

77. A. Braides, Discrete membranes with defects. *Oberwolfach Reports* **1** (2004), 1553–1555.

78. N. Ansini and A. Braides. Erratum to: "Asymptotic analysis of periodically-perforated nonlinear media" *J. Math. Pures Appl.* **84** (2005), 147–148

79. A. Braides and V. Chiadò Piat . Another brick in the wall. In *Variational Problems in Material Science (SISSA Sept. 2004)*, Gianni Dal Maso et al. eds. Progr. Nonlinear Differential Equations Appl., 68, Birkhäuser, Basel, 2006, 13–24

80. N. Ansini, A. Braides and V. Valente. Multi-Scale Analysis by Γ-convergence of a Shell-Membrane Transition. *SIAM J. Math. Anal.* 38 (2006), 944–976

81. A. Braides, Variational problems involving percolation. *Oberwolfach Reports* **2** (2005), 2782–2784.

82. A. Braides and M. Briane. Homogenization of non-linear variational problems with thin low-conducting layers. *Appl. Math. Optim.* **55** (2007), 1–29

83. R. Alicandro, A. Braides and M. Cicalese. Phase and anti-phase boundaries in binary discrete systems: a variational viewpoint. *Netw. Heterog. Media* **1** (2006), 85–107

84. R. Alicandro, A. Braides and M. Cicalese. Dimension reduction for discrete systems. In *Applied and Industrial Mathematics in Italy II. Selected Contributions from the 8th SIMAI Conference* (V. Cutiello, G. Fotia, L. Puccio eds.), World Scientific, Singapore, 2007, 25–36.

85. A. Braides and C. I. Zeppieri. A note on equi-integrability in dimension reduction problems. *Calc. Var. Partial Differential Equations* **29** (2007), 231-238

86. A. Braides. A. Chambolle, and M. Solci. A relaxation result for energies defined on pairs set-function and applications *ESAIM: COCV*, **13** (2007), 717-734

87. A. Braides, M. Solci, and E. Vitali. A derivation of linear elastic energies from pair-interaction atomistic systems. *Netw. Heterog. Media* **2** (2007), 551-567

88. A. Braides and A. Gloria. Exact bounds on the effective behaviour of a conducting 'discrete' polycrystal. *Multiscale Modeling and Simulation* **6** (2007), 1198-1216

89. A. Braides and V. Chiadò Piat. Non convex homogenization problems for singular structures. *Netw. Heterog. Media*, **3** (2008), 489-508

90. A. Braides and G. Riey. A variational model in image processing with focal points. *ESAIM: M2AN* **42** (2008) 729–748

91. A. Braides and L. Truskinovsky. Asymptotic expansions by Gamma-convergence. *Cont. Mech. Therm.* **20** (2008), 21–62

92. A. Braides. The use of Γ-convergence in the analysis of problems with multiple scales. *Oberwolfach Reports*, 2007.

93. A. Braides and L. Sigalotti. Asymptotic analysis of periodically-perforated nonlinear media at and close to the critical exponent. *C.R. Acad. Sci. Paris* **346** (2008), 363–367.

94. R. Alicandro, A. Braides, and M. Cicalese. Continuum limits of discrete thin films with superlinear growth densities. *Calc. Var. Partial Diff. Eq.* **33** (2008), 267–297

95. A. Braides and C.I. Zeppieri. Multiscale analysis of a prototypical model for the interaction between microstructure and surface energy. *Interfaces Free Bound.* **11** (2009), 61–118.

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99. A. Braides, G. Riey, and M. Solci. Homogenization of Penrose tilings. *C.R. Acad. Sci., Ser.* I **347** (2009), 697–700

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103. A. Braides and A. Piatnitski. Homogenization of surface and length energies for spin systems. *J. Funct. Anal.* **264** (2013), 1296–1328

104. A. Braides, A. Defranceschi and E. Vitali. A compactness result for a second-order variational discrete model. *M2AN* **46** (2011), 389-410

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108. A. Braides. Analysis of Lennard-Jones interactions in 2D. *Oberwolfach Reports*, 2011.

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115. A. Braides An example of non-existence of plane-like minimizers for an almost-periodic Ising system. *J. Stat. Phys.* **157** (2015), 295–302

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117. A. Braides and L. Kreutz. Optimal bounds for periodic mixtures of nearest-neighbour ferromagnetic interactions. *Rend. Lincei Mat. Appl.* **28** (2017), 103–117

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141. A. Bach, A. Braides, and C. I. Zeppieri. Quantitative analysis of finite-difference approximations of free-discontinuity problems. *Interfaces Free Bound.* **22** (2020), 317–381

142. A. Braides, A. Causin, and M. Solci. A homogenization result for interacting elastic and brittle media *Proc. R. Soc. A* **474** (2018), 20180118.

143. A. Braides and A. Tribuzio. Perturbed minimizing movements of families of functionals. *Discr. Cont. Dyn. Syst.-S* **14** (2021), 373–393

144. A. Braides and N. Nodargi. Homogenization of cohesive fracture in masonry structures. *Mathem. Mech. Solids* **25** (2020) 181–200.

145. A. Bach, A. Braides, and M. Cicalese. Discrete-to-continuum limits of multi-body systems with bulk and surface long-range interactions. *SIAM J. Math. Anal.* **52** (2020), 3600–3665.

146. A. Braides and A. Piatnitski. Homogenization of random convolution energies in heterogeneous and perforated domains. *Adv. Calc. Var.*, to appear

147. A. Braides and A. Piatnitski. Homogenization of quadratic convolution energies in periodically perforated domains. *J. London Math. Soc.*, to appear

148. A. Braides and M. Solci. Compactness by coarse-graining in long-range lattice systems. *Adv. Nonlin. Studies* **20** (2020), 783–794

149. A. Braides and A. Piatnitski. Homogenization of ferromagnetic energies on Poisson random sets in the plane. Preprint 2020

150. A. Braides, V. Chiad Piat, and L. D'Elia. An extension theorem from connected sets and homogenization of non-local functionals, Preprint 2020

151. R. Alicandro, N. Ansini, A. Braides, A. Piatnitski, and A. Tribuzio. A variational theory of convolution-type functionals, Preprint 2020

152. A. Braides and V. Vallocchia. Two geometric lemmas for S^{N-1}-valued maps and an application to the homogenization of spin systems. Preprint 2020

153. R. Alicandro, A. Braides, M. Cicalese, L. De Luca, and A. Piatnitski. Topological singularities in periodic media: Ginzburg-Landau and core-radius approaches. Preprint 2020

154. A. Braides, G. Scilla, and A. Tribuzio. Nucleation and growth of lattice crystals. Preprint 2020.

Books

1. A. Braides and A. Defranceschi. *Homogenization of Multiple Integrals*. Oxford University Press, Oxford, 1998.

2. A. Braides. *Approximation of Free-Discontinuity Problems*. Lecture Notes in Math. **1694**, Springer Verlag, Berlin, 1998.

3. A. Braides. Γ-*convergence for Beginners*. Oxford University Press, Oxford, 2002.

4. A. Braides and V. Chiadò Piat (editors) *Topics on concentration phenomena and problems with multiple scales. Lecture Notes of the Unione Matematica Italiana* **2**. Springer-Verlag, Berlin, 2006.

5. A. Braides. *Local Minimization, Variational Evolution and* Γ-*convergence*. Lecture Notes in Math. **2094**, Springer Verlag, Berlin, 2014.

6. A. Braides and M. Solci. *Geometric Flows on Planar Lattices*. Springer, to appear.

Book chapters

1. A. Braides. A handbook of Γ-convergence. In *Handbook of Differential Equations. Stationary Partial Differential Equations, Volume 3* (M. Chipot and P. Quittner, eds.), Elsevier, Amsterdam, 2006, p. 101–213.

2. A. Braides and M.S. Gelli. From discrete systems to continuous variational problems: an introduction. In *Topics on concentration phenomena and problems with multiple scales* (A. Braides and V. Chiadò Piat, eds.), *Lect. Notes Unione Mat. Ital.* **2** Springer, Berlin, 2006, 3–77.

Other books

1. G. Bonfanti e A. Braides. *Temi da Esame di Analisi Matematica* I. Edizioni Città Studi, Milano, 1998 (third edition).

Organization of Congresses, Schools

1992, March 2–6 Workshop "New Approaches to Fracture Mechanics" Edinburgh, Heriot-Watt University (with J.M. Ball (Heriot-Watt) and J. Willis (Oxford))
2001, Dec 3-5: School 'Homogenization techniques and asymptotic methods for problems with multiple scales' (IAC - Roma) - Courses by G. Francfort e R. Peirone
2003, Sept 1-5: School 'Concentration Phenomena for Variational Problems' (Dipartimento di Matematica, Università di Roma 'La Sapienza') - Courses by G. Alberti, A. Garroni. D. Smets e M. Soner.

2004, Jan 26-28: School 'Geometric Evolution Problems' (Roma). Courses by G. Bellettini e S.Serfaty.

2004, May 24-26: Mini-symposium 'Homogenization of Lattice Systems'. SIAM Conference on 'Materials Science' (Los Angeles). Lectures by M. Cicalese, W.E, Y.Efendiev, A.Lew.

2005, Sept 12-16 'Second summer School on Analysis and Applied Mathematics' (Rome). Lectures by P. Cardaliaguet, G. Huisken, C. De Lellis, C. Sinestrari.

2007, June 11-15 'Fourth Summer School on Analysis and Applied Mathematics' (Rome). Lectures by JM. Ball, S. Müller, V.Šverák.

2008, May 11-14: Mini-symposium 'From Discrete to Continuous, and back'. SIAM Conference on 'Materials Science' (Philadelphia)

2008, June 9-11 'Workshop on Applied Mathematics and Calculus of Variations' (Rome)

2011, June 20-24 'Sixth Summer School on Analysis and Applied Mathematics' (Rome) Lectures by A. De Simone, M. Ortiz, A. Quarteroni.

2013, April 8-12. Problems with Multiple Scales: Results and New Perspectives Rome,

2013. June 17-21. 'Seventh Summer School on Analysis and Applied Mathematics' (Rome) Lectures by F. Otto, G. Savaré, L. Truskinovsky.

2014. March 31-April 4. Workshop 'From Atomistic to Continuum Models in Materials Science'. GSSI, L'Aquila, Italy (organizer)

2014. July 21-25. Organizing Committee CMDS -13: International Conference Continuum Models and Discrete Systems. Salt Lake City, USA

2015. June 15-29. 'Eighth Summer School on Analysis and Applied Mathematics' (Rome) Lectures by M.Cicalese, G.Friesecke, R.D.James, S.Serfaty.

2016. September 13-16. Meeting in Applied Mathematics and Calculus of Variations. Rome.

2017. June 5-9. 'Ninth Summer School on Analysis and Applied Mathematics' (Rome) Lectures by J.A.Carrillo, A.Chambolle, R.Choksi, M.Peletier.

2018. July 16-18. 'EMS Lecture Summer School'. Lectures by G.Staffilani and N.Visciglia.

2018. September 3-6. 'Meeting in Applied Mathematics and Calculus of Variations'. Rome.

2018. October 28-November 2. Emergence of Structures in Particle Systems: Mechanics, Analysis and Computation. Oberwolfach Workshop ID 1844

PhD theses adviser

R. Alicandro. *Approximation of Free-Discontinuity Problems* (SISSA, 1999);

M.S. Gelli. *Variational Limits of Discrete Systems* (SISSA, 1999);

N. Ansini. *Homogenization of Structures with Multiple Scales* (SISSA, 2000).

M. Cicalese. *Multi-scale analysis for variational problems arising from discrete systems* (Università di Napoli 'Federico II', 2003).

C.I. Zeppieri. *Asymptotic expansions for variational theories* (Università di Roma 'La Sapienza', 2007)

L. Sigalotti. *Asymptotic analysis of discrete systems with complex interfacial interactions* (Università di Roma 'La Sapienza', 2010)

G. Scilla. *Variational motion of discrete interfaces* (Sapienza Università di Roma, 2014)

A. Cancedda. *Spectral analysis and problems with oscillating constraints in the theory of Homogenization* (Politecnico di Torino, 2015) (co-supervised with V.Chiadò Piat)

L. Kreutz. *Some results on ferromagnetic spin systems and related issues* (GSSI, L'Aquila, 2018)

V. Vallocchia *Some asymptotic problems for non-convex discrete systems* (Università di Roma "Tor Vergata", 2018)

A. Tribuzio *Some perturbed evolution problems* (Università di Roma "Tor Vergata", 2020)

Theses committees
1999 SISSA
2000 SISSA
2002 Leipzig: Schloemerkemper
2002 Roma 'La Sapienza': Procesi, Santucci (failed)
2003 Pisa: Prinari
2004 Pisa: Davini, Gori
2005 Paris Nord: Babadjian
2005 Paris 6: Blanc (Habilitation)
2007 Warwick: Capet
2007 SISSA: Barchiesi
2008 Roma 'Tor Vergata': Parillo
2009 Oxford (Queen's College): Henao Manrique
2013 Goteborg (Chalmers): Douanla ("opponent")
2015 Oxford (Merton College): Bedford
2016 University of Sevilla: Pallares Martín

Post and pre-doc coordinator
2005 JF Babadjian (TMR pre-doc)
2005/06 M. Baia (Portuguese grant)
2006 A Gloria (TMR pre-doc)
2015/16 G Scilla
2019/2021 M. Caroccia

Visiting positions
1994. Tata Institute of Fundamental Research, Bangalore, India (1 month)
1998. Max-Planck Institut, Leipzig (5 months); Centre Emile Borel, Paris (1 week); Department of Aerospace Engineering and Mechanics, University of Minnesota (2 weeks); California Institute of Technology (2 weeks)
1999: Carnegie-Mellon University, Pittsburgh (2 weeks), Isaac Newton Institute, Cambridge, UK (2 weeks)
2000. University Pierre et Marie Curie - Paris VI (1 month)

2001. University Pierre et Marie Curie - Paris VI (1 month)
2002. University Paris Nord - Paris XIII (1 month)
2003. California Institute of Technology (2 weeks), Carnegie-Mellon University, Pittsburgh (2 weeks), INSA, Rennes (1 month)
2004. California Institute of Technology (1 week), Stanford University (1 week), Tata Institute of Fundamental Research, Bangalore, India (1 month)
2007 Benasque Center, Spain (2 weeks)
2008 Narvik University, Norway (2 weeks), California Institute of Technology (1 week), IMA, Minneapolis (1 week)
2011 Bonn University (1 week), University of Bath (1 week)
2012 Narvik University, Norway (1 week)
Aug 2013- July 2014 Oxford (one-year sabbatical)
2015 Jan-Mar TUM, Munich, Germany (3 months)

Refereeing activity
I have acted as a referee for many journals, among which
Acta Mathematica
Annali della Scuola Normale Superiore di Pisa,
Archive for Rational Mechanics and Analysis,
Asymptotic Analysis,
Communications in Pure and Applied Mathematics,
Control, Optimization and Calculus of Variations,
ESAIM: Mathematical Modelling and Numerical Analysis
Indiana University Mathematical Journal,
Interfaces and Free Boundaries,
Journal de l'Institute Henri Poincaré – Analyse Nonlinéaire,
Journal de Mathématiques Pures et Appliquées,
Journal of Convex Analysis,
Journal of Elasticity,
Journal of Mathematical Analysis and Applications,
Journal of Nonlinear Mathematical Physics,
Journal of Nonlinear Sciences,
Mathematical Models and Methods in the Applied Sciences
Mathematical Models in the Applied Sciences
Proceedings of the Royal Society of Edinburgh A,
Proceedings of the London Royal Society
Rendiconti di Matematica,
SIAM Journal of Mathematical Analysis,
and for Oxford University Press and Springer (book project evaluations).
Reviewer for Italian and Foreign Research Agencies.
Invited nominator: The Shaw Prize in Mathematical Sciences 2017, 2018, 2019, 2020

Editorial activity

Editorial Board. Encyclopedia of Mathematical Physics. Elsevier, 2006
Associate Editor. Networks and Heterogeneous Media. Since 2008
Editorial Board. Archive for Rational Mechanics and Analysis. Since 2012
Advisory Board. Mathematics and Mechanics of Complex Systems. Since 2013
Editorial Board. Journal de l'École Polytechnique. Since 2014

Courses and lessons at schools

Sept 6–17, 1993: "School on Homogenization" (Trieste, I.C.T.P.) - Course: An Introduction to Homogenization and Γ-Convergence (other courses by Allaire, Buttazzo, Defranceschi and Gibianski)
July 15-Aug 15 1994 "Topics in Γ-convergence" (Tata Institute of Fundamental Research - 9 conferences; see Seminars).
May 8–10, 1996: mini-course on "Homogenization of Differential operators and Integral Functionals" (Roma, Dip. Me. Mo. Mat.) (with A. Pankov)
Sept 16–21 1996: Scuola di calcolo delle variazioni (Pisa) (1 side lesson - courses by Ambrosio e Dancer)
June 15, 1999 Nuovi modelli variazionali in meccanica della frattura (2 lectures) (Ferrara - Scuola di dottorato in Ingegneria civile)
Sept 17-21, 2001 - School 'Homogenization techniques and asymptotic methods for problems with multiple scales' (Dip. Mat. Politecnico - Torino) - 'From discrete to continuous variational problems: an introduction' (8 lectures)
July 15-Aug 9, 2004 - Course 'From Discrete Systems to Continuous Variational Problems' (4 lectures) (Tata Institute for Fundamental Research, Bangalore)
Oct 26-30, 2004 - MULTIMAT Meeting (Leipzig) - The relation between discrete and continuous variational problems (1 lecture)
May 16-20 2005 - VIGRE Course 'The passage from discrete systems to continuous variational problems' (10 lectures)
May 23-27 2005 - INdAM, Rome. Recent Advances in Homogenization 'Homogenization of Lattice Systems' (other courses by M.Bardi, L.Caffarelli, P.L.Lions, P.Souganidis)
Sept, 4-9, 2006 Ponta Delgada, Azores, 2006 'Summer School on Calculus of Variations and Applications'. 'Homogenization of Lattice Systems' (other courses by B.Dacorogna, I.Fonseca and N. Fusco)
Jan 2012. Würzburg Univ. School Calculus of Variations in Physics and Materials Science. 'From Discrete Systems to Continuum Problems' (other courses by JM. Ball and S. Mueller)
June 18-29, 2012. Summer School on Recent Advances in the Theory of Homogenization, Department of Mathematics, University of Chicago
April 20-24, 2015. Intensive period on "Variational Methods for Plasticity and Dislocations", SISSA, Trieste. 'Topics in the passage discrete-to-continuum for lattice systems'
June 27-29, 2016. Thematic Program on 'Nonlinear Flows' at the Erwin Schrödinger Institute in Vienna. 'Variational motion in heterogeneous media'

July 22-26, 2019. Summer School: Multiscale Phenomena at TU Munich. 'Geometric flows on lattices'.

Advanced Graduate Courses (since 2000)

2000/2001. Gamma-convergence for beginners (Dottorato in Matematica, Roma)

2001/2002: Asymptotic problems in the Calculus of Variations (Dottorato in matematica applicata, MeMoMat, Università di Roma La Sapienza)

2002/2003: Multi-scale analysis of variational theories (Dottorato in Scienze dell'Ingegneria Civile, Università di Roma Tre)

2006/2007: Topics in the Calculus of Variations (Dottorato in matematica applicata, MeMoMat, Università di Roma La Sapienza)

2007/2008: From discrete systems to continuum variational problems (Dottorato in matematica applicata, MeMoMat, Università di Roma La Sapienza)

2008/2009: Topics in the Calculus of Variations, with M.Cicalese (Dottorato in matematica applicata, MeMoMat, Università di Roma La Sapienza)

2011/2012: Local minimization, variational evolution and Gamma-convergence. (Dottorato in Matematica, Università di Roma Sapienza)

October 2012. From Discrete Systems to Continuum Variational Problems (University of Narvik).

November 2012 - January 2013. Local minimization, variational evolution and Gamma-convergence. (Dottorato in Matematica, Università di Pavia)

January 2015. "Local minimization, variational evolution and Gamma-convergence" (John-von-Neumann lectures - Wintersemester 2014/15. TUM, Munich)

Some invited conferences at congresses, workshops

March 21–25, 1993. Giornate di lavoro su calcolo delle variazioni e teoria geometrica della misura (Trento, C.I.R.M.) - Rilassamento di funzionali in SBV

June 21–25, 1993. "Relaxation, Homogenization and Continuum Mechanics" (Luminy) - Approximation of Relaxed Dirichlet Problems

Sept 20–Oct 1, 1993. "Second Workshop on Composite Media and Homogenization Theory" (Trieste, I.C.T.P.) - Homogenization and polyconvexity

Feb 14–18, 1994: Giornate di lavoro su calcolo delle variazioni e teoria geometrica della misura (Trento, C.I.R.M.) - Omogeneizzazione e policonvessità

Apr 7–11, 1994: "Sino-Italian Joint Seminar on Calculus of Variations and Related Topics" (Taipei, Taiwan) - Free Discontinuity Problems

May 23–27, 1994: Euromech 321 "Microstructures and Phase Transitions in Solids" (Udine, C.I.S.M.) - Relaxation and Γ-convergence methods for Free Discontinuity Problems

June 5–9, 1995: "Eurhomogenization Colloquium" (Nice) - Homogenization of free discontinuity problems

June 12–16 giugno 1995 "Calculus of Variations and Nonlinear Elasticity" (Cortona)

Aug 21-26, 1995 "Nonlinear Differential Equations" (Kiev, Ukraine) - Free Discontinuity Problems

Feb 12–16, 1996: Giornate di lavoro su calcolo delle variazioni e teoria geometrica della misura (Trento, C.I.R.M.) - Funzioni SBV con derivate tangenziali su S_u

Feb 16–18 1996 "Eurhomogenization Meeting" (Poigny) - Free discontinuity problems with tangential derivatives

June 23 1997 "Continuum Mechanics" (Oberwolfach) - Non-monotone stress-strain relations and surface energies

May 25–30, 1998 "Systems with Multiple Scales" (Oberwolfach) - Asymptotic models for thin structures

Oct 14–15, 1999 "Equazioni differenziali - problemi variazionali" (Udine) - Modelli variazionali approssimati in meccanica della frattura

Oct 24–30, 1999 "Equazioni alle derivate parziali e Calcolo delle variazioni" (Isola d'Elba) - New Issues in the asymptotic analysis of discrete systems

Nov 1–12, 1999. "Models of Fracture" (Cambridge, I. Newton Institute) - Non-convex discrete systems and fracture

Nov 28– Dec 5 1999: "Multiscale Problems and Homogenization" (Heidelberg, IWH)

Dec 6/7 1999. 'Dynamics of phase transitions" (Oxford)

Feb 1–5, 2000: Giornate di lavoro su calcolo delle variazioni e teoria geometrica della misura (Trento, C.I.R.M.) - Limiti di sistemi discreti complessi

June 5–9, 2000, 'V Congresso SIMAI' (Ischia) - Edge detection by curvature functionals

July 2-7, 2000 - Congress 'Calculus of Variations' (Oberwolfach) Passage from discrete to continuous variational problems

Aug 21–27, 2000. "International conference on differential equations and dynamic system" (Suzdal', Russia) - Asymptotic analysis of nonconvex discrete systems

Sept 4–8, 2000 "French-German-Italian conference on Optimization" (Montpellier) - From Discrete to Continuum: a variational viewpoint

Sept 18–22, 2000 "Mathematical problems in Image Processing" (Trieste, ICTP) - Some variational problems involving curvature arising from Computer Vision

Feb 18-20, 2001 - Workshop 'Beyond Elasticity' (Max-Planck Inst. Leipzig) - Continuum variational limits of nonconvex discrete systems

June 23-27, 2001 - Workshop 'Homogenization and Multiple Scales' (Univ. Naples) - The gradient theory of phase transitions in inhomogeneous media.

Oct. 24-27, 2001 - Congress 'The Mathematics of Ennio De Giorgi' (Scuola Norm. Pisa) - The construction of asymptotic theories by Γ-convergence

May 27-31, 2002 - SIMAI Congress (Chia Laguna)- The construction of asymptotic theories by variational convergence

June 12-16, 2002 - Joint AMS-UMI congress (Pisa) - Mini-symposium 'Mathematics and Composites' (organizers V. Nesi e R.V. Kohn) - Optimal bounds for conducting networks

July 1-5, 2002 - Congress 'Calculus of Variations' (Oberwolfach) - Elliptic approximation of curvature-sensitive image-segmentation energies

May 30-June, 2003- Congress 'Advances in Nonlinear Analysis' (CMU - Pittsburgh) - Multiple-scale effects in the passage from discrete to continuum variational problems.

June 23-26, 2003 - NATO Advanced Workshop 'Nonlinear Homogenization and its applications' (Kasimierz Dolny - Poland) - The passage from discrete to continuum variational problems: a nonlinear homogenization process.

Dec 4-6, 2003 Workshop "Discrete atomistic models and their continuum limit " (Weierstrass-Institut für Angewandte Analysis und Stochastik, Berlin) - Γ-limits of discrete systems

Feb 01-07, 2004. Workshop 'Mathematical aspects of material science: discrete and continuum descriptions of matter' (Castle Ringberg, Germany) - Continuum limits of discrete systems via Γ-convergence

May 13-14, 2004. Congress 'Fisica su varietà frastagliate' (Dip. Me.Mo.Mat. - Roma) - Membrane deboli con difetti random

May 23, 2004 SIAM Conference: Mathematical Aspects of Materials Science - Minisymposium 'Composites and polycrystals' (Hyatt Regency - Los Angeles) - Bounds for conducting networks

May 25, 2004 SIAM Conference: Mathematical Aspects of Materials Science - Minisymposium 'Contemporary Calculus of Variations for Advanced Materials' (Hyatt Regency - Los Angeles) - A random weak membrane model

June 14–18, 2004. Workshop 'Calculus of Variations' (Oberwolfach) - Discrete membranes with defects

September, 6–10, 2004. Conference 'Variational Problems in Materials Science' (SISSA, Trieste) - Surface energies in discrete systems

Nov 26-27, 2004. 'Recents Advances in Homogenization' (Trento, Dip.Mat.) - Multiscale analysis of lattice systems

May 23-27 2005 Recent Advances in Homogenization (INdAM, Roma) - "Homogenization of Lattice Systems"

June 8-11 2005 Materials and macromolecules (IMA, Minneapolis, USA) - "Simple lattice systems with complex continuous description"

June 30-2 July 2005 The Rational Modeling of Materials and Structures (Univ. Reggio Calabria) - "Relaxation and unilateral constraints"

July 18-22 2005 Dynamical Problems in Mathematical Materials Science (ICMS, Edinburgh, Scotland) - "Anti-phase boundaries in simple lattice systems"

Oct 8-10 2005 Theories of Microstructures and Defects (Polignano (BA)) - "A model for a weak membrane with defects"

Oct 31-4 Nov 2005 Transport and Flow Through Complex Systems (Oberwolfach (Germany)) - "A model for a weak membrane with defects"

Sept 12, 2006 Workshop in Calculus of Variations and Applications. Instituto Superior Técnico, Lisbon, Portugal - "The use of Γ-convergence in the study of asymptotic problems"

10-14 October, 2006 (Centro De Giorgi, Pisa) Variational Methods in Material Science - Asymptotic analysis of binary discrete systems

Oct 16-18 2006. Rome 2. Workshop on Microscopic Approaches to Elastic and Surface Tension Functionals. Gamma-convergence of discrete systems

Oct 26-28 2006. Rome-CNR. "Smart-Systems". The use of Gamma-convergence in the study of asymptotic problems.

Aug 27-Sep 7, 2007. Benasque (S) "Partial differential equations, optimal design and numerics". The construction of asymptotic theories by Gamma-convergence.

Sept 10-14, 2007, INdaM, Rome "School on Probablility: De Ludo Aleae". Variational Problems with percolation

Dec 17-21, 2007. Oberwolfach (G) Conference "Mathematical Materials Theories". The use of Gamma-convergence in the analysis of multiscale problems

Jan 12-14, 2008. CISM, Udine. "Mathematical Modeling, Mechanics & Materials". The use of Gamma-convergence in the analysis of multiscale problems

March 10, 2008. OxMOS, Oxford (UK). "Workshop on Fracture". Variational lattice models of fracture

April 28, 2008. Oberwolfach (D) "Atomistic Models of Materials: Mathematical Challenges". Motion of discrete interfaces

May 12, 2008: SIAM Conference on 'Materials Science' (Philadelphia). The Use of Gamma-convergence in the Analysis of Multiscale Problems

May 14, 2008: SIAM Conference on 'Materials Science' (Philadelphia). Motion by Curvature in Heterogeneous Media

Nov 5, 2008: IMA, Minneapolis. Workshop 'Development and Analysis of Multiscale Methods'. Variational coarse graining of lattice systems

June 26, 2009. Anogia (Greece). Workshop 'Mathematical challenges motivated by multiphase materials'. Stochastic and deterministic analysis of models of defects in discrete systems

July 8, 2009. PIMS, University of British Columbia, Vancouver (Canada). Conference 'Asymptotic analysis in the calculus of variations and PDEs'. Asymptotic analysis of discrete systems

December 7-9, 2009. 'Atomistic Models of Solids Workshop', Oxford. Asymptotic analysis of discrete systems

September 7-9, 2010. The Royal Netherlands Academy of Arts and Sciences, Amsterdam. Conference 'Multi-scale problems in sustainable resource management'. Multi-scale problems for lattice systems.

April 15, 2011. Politecnico di Torino. One day on PDE's an calculus of variations. Conference 'Asymptotic problems for lattice systems'

May 23-28, 2011. Île de Re (France). Workshop on Dislocations, Ginzburg-Landau equations and Homogenization. Homogenization of Lattice Systems.

May 30-June 3, 2011. BIRS, Banff (Canada). Workshop 'Gradient Random Fields'. Variational problems with percolation

Dec 8, 2011. Oberwolfach (D). "Variational Methods for Evolution". Analysis of Lennard-Jones interactions in 2D.

June 6-8, 2012. Otranto. Variational Problems with Multiple Scales

July 4-6, 2012. Saint Petersburg, Russia. Exotic Structures and Homogenization

September 3-6 2012. Technion (Haifa) 2012 ISIMM Symposium STAMM XVIII (Keynote Speaker)

March 18-22 2013. GAMM 2013, Novi Sad, Serbia (Plenary Speaker)

May, 1-5, 2013. Multi-scale Modeling and Characterization of Innovative Materials and Structures, Cetara

October 9-11, 2013. ERC Workshop on Energy/Entropy-Driven Systems and Applications. WIAS, Berlin

November 29, 2013. Atomistic to Continuum Modelling - Oxford Solid Mechanics Workshop

March 24-28, 2014. Calculus of Variations, Geometric Analysis & Partial Differential Equations. University of Sussex, Brighton, UK

August 2014. International Congress of Mathematicians ICM 2014, Seoul (Invited Sectional Speaker)

September, 15-18, 2014. Atomistic and Multi-Scale Models of Materials. PIRE Workshop. University of Warwick, UK

September, 22-24, 2014. Variational Modeling in Solid Mechanics. Università di Udine.

June 29-July 3, 2015. Geometric Measure Theory and Calculus of Variations: Theory and Applications. Fourier Institute, Grenoble, France

July, 13-17, 2015. SPA (Stochastic Processes and Applications) 2015. Oxford, UK (Invited-Minisymposium Speaker)

August, 10-14, 2015. Minisymposium "Evolution of interfaces driven by anisotropic laws", ICIAM, Beijing

October 12, 2015. Tullio Levi Civita Lecture. Sapienza Università di Roma.

May 16-21, 2016. New Challenges for the Calculus of Variations Stemming From Problems in the Materials Sciences and Image Processing. CRM, Montreal, Canada

June, 6-10, 2016. Advances in the Mathematical Analysis of Material Defects in Elastic Solids. SISSA, Trieste.

September 5-9, 2016. INdAM-ISIMM Symposium on Trends in Application of Mathematics to Mechanics (STAMM), Rome.

September 8-10, 2016. Fourth Workshop on Thin Structures. Napoli.

September 19-23, 2016. A Mathematical Tribute to Ennio De Giorgi. Centro De Giorgi, Pisa

May 5-7, 2017. Nonconvexity, Nonlocality and Incompatibility: from Materials to Biology. University of Pittsburgh, USA

June 1, 2017. Meeting on analysis and modeling of multi-scale problems. Politecnico di Torino

May 17-19, 2018. Mathematics and Science: In Honour of Sir John Ball. Mathematical Institute, Oxford

July 5-9 2018. 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications. Taipei, Taiwan. Minisymposium "Mathematics and Materials: Models and

Applications"

July 5-9 2018. 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications. Taipei, Taiwan. Minisymposium "Mathematical models and methods in materials science"

September 24-28, 2018. AnaLysis of Evolutionary and compleX systems (ALEX2018). WIAS and HU Berlin, Germany

March 25-29, 2019. International Workshop - MACH2019 Mathematical modeling and Analysis of degradation and restoration in Cultural Heritage. INdAM, Rome

July 1-5, 2019. Calculus of Variations on Schiermonnikoog, The Netherlands

September 15-19, 2019. 6th Applied Mathematics Symposium Münster, Germany

November, 11-15, 2019. Modeling of crystalline Interfaces and Thin Film Structures: a Joint Mathematics-Physics Symposium. Erwin Schrödinger Institute, Vienna

January, 28–February 1, 2020. Calculus of Variations and Applications. SISSA, Trieste

June 15. One-World Seminars MADS. Erlangen

Seminars (partial list)

Feb 21, 1991 (Heriot-Watt University) Homogenization of Almost Periodic Monotone Operators

June 6, 1991 (Heriot-Watt University) Free Discontinuity Problems in the Calculus of Variations

Dec 18, 1991 (Univ. di Pisa - I.M.A. Ingegneria) Problemi a discontinuità libera e meccanica delle fratture

March 3, 1992 (Heriot-Watt University) Singular Perturbation for Functionals in Fracture Mechanics

May 7, 1992 (Politecnico di Torino) A Singular Perturbation Approach to Problems in Fracture Mechanics

May 25, 1993 (Cortona- Convegno) Lower Semicontinuous Functionals in BV

June 7, 1993 (Napoli - Dip. di Matematica) Approssimazione di problemi di Dirichlet rilassati

June 8, 1993 (Napoli - Ist. di Matematica, Fac. di Architettura) Semicontinuità e rilassamento di funzionali su BV

July 20, 1994(TIFR Bangalore, India) Loss of Polyconvexity by Homogenization

July 22, 1994 (TIFR Bangalore, India) Free Discontinuity Problems in the Calculus of Variations

July 25, 1994 (TIFR Bangalore, India) Integral Representation for Functionals on BV

July 26, 1994 (TIFR Bangalore, India) Integral Representation for Functionals on BV – The Discontinuous Case

July 27, 1994 (TIFR Bangalore, India) Homogenization of Free Discontinuity Problems

Aug 1, 1994 (Mathematical Institute, Madras, India) Properties of Hyperelastic Composites

Aug 5, 1994 (TIFR Bangalore, India) Relaxed Dirichlet Problems

Aug 8–10, 1994 (TIFR Bangalore, India) Integral Representation of Γ-limits (three seminars)

Jan 20, 1995 (Pisa, Dip. Matematica) Meccanica delle fratture in mezzi compositi

Apr 29, 1996 (Ferrara, Dip. Meccanica) Omogeneizzazione di problemi a discontinuità libera

May 24, 1996 (Toulouse, Ceremath) Non-local approximation of free discontinuity problems

May 31, 1996 (Trento, Dip. Matematica) Approssimazione non-locale del funzionale di Mumford-Shah

June 4, 1996 (Ankara, METU - Workshop) Non-local approximation of free discontinuity problems

Sept 18, 1996 (Pisa - Scuola di calcolo delle variazioni) Free-discontinuity problems and their non-local approximation

Nov 18, 1996 (Roma 1, Dip. Matematica) Problemi a discontinuità libera e loro approssimazioni

May 5, 1997 (Roma 1, Dip. Me.Mo.Mat.) Omogeneizzazione di strutture multidimensionali

May 26, 1997 (Cortona- Convegno "Congettura di Mumford-Shah") On the approximation of free-discontinuity problems

Nov 5, 1997 (Parma, Dip. Mat.) Omogeneizzazione di strutture multidimensionali

Jan 21, 1998 (Oberseminar Max-Planck Institute, Leipzig - D) Softening phenomena in fracture mechanics

Jan 29, 1998 (Dipartimento di Meccanica, Udine) Omogeneizzazione di strutture multidimensionali

Sept 10, 1998 (Dipartimento di Meccanica, Ferrara) Limiti variazionali di sistemi discreti

Oct 2, 1998 (Department of Aerospace Eng. and Mechanics, University of Minnesota, Minneapolis USA) Approximate variational models for fracture mechanics

Oct 16, 1998 (Department of Applied Mechanics, California Inst. of Technology, Pasadena USA) Approximate variational models for fracture mechanics

Nov 3, 1998 (Inst H. Poincaré, Parigi, Francia - Workshop "Image Analysis") Approximation of free-discontinuity problems

Feb 16, 1999 (Carnegie Mellon University, Pittsburgh, USA) Approximate variatonal models for brittle fracture

June 3, 1999 (Pisa - Dipartimento di matematica) Metodi asintotici per strutture sottili

July 22, 1999 (Cassino) Modelli variazionali approssimati in meccanica della frattura

Oct 18, 1999 (Roma - IAC) Modelli variazionali approssimati in meccanica della frattura

Mar 31, 2000 (Paris VI) Limits of discrete systems

Apr 4, 2000 (Lyon) Asymptotic behaviour of nonlinear perforated media

May 4, 2000 (Courant Inst. New York) Analysis of nonconvex discrete systems

Jan 25, 2001 - Napoli (Dip. Mat.) Limiti continui di sistemi discreti non-convessi

Feb 15, 2001 - Roma (Dip. Mat. Roma 2) Limiti variazionali di sistemi discreti non-convessi

Feb 22, 2001 - Leipzig (MPI) Variational Methods in Fracture Mechanics

Mar 14, 2002 - Parma (Dip. Mat.) Approssimazione di funzionali di curvature

Mar 29, 2002 - Parigi (CERMICS) From discrete to continuum variational problems

May 9, 2002 - Lecce (Dip. Mat.) Stime ottimali per limiti di sistemi discreti

May 15, 2002 - Napoli (Dip. Mat.) Stime ottimali per sistemi discreti

May 16, 2002 - Salerno (Dip. Ing. Civile) Introduzione alla Gamma-convergenza

June 27, 2002 - Rennes (Dep. Math.) The construction of asymptotic theories by variational convergence

Sept 18, 2002 - Milano (Dip. Mat. Politecnico) Stime ottimali per reti di conduttori

Feb 10, 2003 Roma (Dip. Mat. 'Castelnuovo') Costruzione di teorie asintotiche per Γ-convergenza

Apr 10, 2003 Rennes (Dep. Math.) A variational approach to double-porosity homogenization

Apr 24, 2003 (Courant Inst. New York) Effective conductivity for plane networks

June 10-11, 2004 (Modena, Dip.Mat.) Il passaggio dal discreto al continuo in problemi variazionali, I e II

Mar 26, 2004 (Paris VI) A discrete-to-continuum random weak membrane model

June 2, 2004 (Stanford - Joint Mechanics and Applied Math Seminar) The passage from discrete systems to continuous variational problems

July 6, 2004 (Dip. Mat. Pavia) - Modelli discreti per membrane con difetti.

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Dec 1, 2006 (MPI-Leipzig). Gamma-convergence and percolation.

Apr 20, 2007 (Prague - MULTIMAT Meeting) - Motion by curvature of discrete interfaces

Sep 4, 2007 (Oxford - MULTIMAT Meeting) - The use of Gamma-convergence in the analysis of multiscale problems

May 27, 2009 (Pisa, Dip. Mat.) - Modelli su reticolo per la meccanica della frattura

Jan 13, 2011 (Bonn, Math. Dep.) - Homogenization of quasicrystals

Mar 30, 2011 (Bath, Math. Dep.) - Multi-scale Problems for Lattice Systems

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Oct 21, 2013 (Oxford, Math. Inst. PDE Seminar) - Local minimization, Variational evolution and Gamma-convergence

Feb 7, 2014 (Warwick Univ., Applied Math Seminar) - Variational methods for lattice systems

Mar 17, 2014 (University of Cardiff, Analysis Seminar) - Variational methods for ferromagnetic and antiferromagnetic spin systems

Mar 20, 2014 (University of Bath, Analysis Seminar) - Variational methods for ferromagnetic and antiferromagnetic spin systems

Apr 10, 2014 (University of Narvik) - Homogenization of Lattice Systems

May 16, 2014 (Université Libre de Bruxelles, Séminaire ANEDP) - Local minimization, Variational evolution and Gamma-convergence

Jan 14, 2015 (TUM, Munich) Discrete-to-Continuum variational methods for Lattice systems

Nov 4, 2015 (Università di Napoli Federico II) Perturbations of variational evolutions
Nov 25, 2015 (Università di Pisa) Perturbations of variational evolutions
Feb 11, 2016 (GSSI, L'Aquila) Homogenization of spin systems
Oct 7, 2019 (Sapienza, Roma) Homogenization of ferromagnetic energies on Poisson Clouds in the plane

Other invitations to Workshops

Mar 30–Apr 3, 1992 Trento, C.I.R.M. Giornate di lavoro su calcolo delle variazioni e teoria geometrica della misura
May 24–28, 1993 Cortona. Convegno "Calculus of Variations and Nonlinear Elasticity"
Feb 20-24, 1995 Trento, C.I.R.M. Giornate di lavoro su calcolo delle variazioni e teoria geometrica della misura
July 7–13, 1996 Oberwolfach (Germania) "Variationsrechnung"
May 26–30, 1997 Cortona. Convegno "Congettura di Mumford-Shah"
June 23–27, 1997 Oberwolfach (Germania) "Continuum Mechanics"
Apr 20–24, 1998 Levico (Trento), C.I.R.M. Giornate di lavoro su calcolo delle variazioni e teoria geometrica della misura
March 1–5, 1999 Levico (Trento), C.I.R.M. Giornate di lavoro su calcolo delle variazioni e teoria geometrica della misura
Sept 6–24, 1999 "Mathematical Developments in Modelling Microstructure and Phase Transformations in Solids" (Cambridge, Newton Institute)
Dec 16–20 2002 Oberwolfach (Germania) "Termodinamische Materialtheorie"
Sept 8–12 2003 Oberwolfach (Germania) "Materials and PDE"
Dec 13–17 2004 Oberwolfach (Germania) "Termodinamische Materialtheorie"
[...]
Aug 23 - Sep 4 2009. Benasque (Spagna) "Partial differential equations, optimal design and numerics"
Sept 11-12, 2009 Seville (Spagna) "Homogenization and Optimal Design"
Sept 13-19 2009 Oberwolfach (Germania) "PDE and Materials"
Dec 13-19 2009 Oberwolfach (Germania) "Material Theories"
Dec 4-9 2011 Oberwolfach (Germania) Variational Methods for Evolution
Jan 22-29 2012 Oberwolfach (Germania) Interplay of Analysis and Probability in Physics
Dec 15-20 2013 Oberwolfach (Germania) "Material Theories"
Jul 14-18 2014 Oberwolfach (Germania) "Calculus of Variations"
Dec 15-19 2015 Oberwolfach (Germania) "Variational Methods for Evolution"
July 16-22 2017 Oberwolfach (Germania) "Material Theories"
Feb 4-10 2018 Oberwolfach (Germania) "Variational Methods for the Modelling of Inelastic Solids"