

## Lavori pubblicati su riviste internazionali

- [1] L. D’Elia, M. Eleuteri, E. Zappale, Homogenization of supremal functionals in the vectorial setting (via  $L^p$  approximation) *Analysis and Applications*, Vol. 22, No. 7 (2024) 1255–1302, DOI 10.1142/S0219530524500179.
- [2] M. Eleuteri, F. Prinari, E. Zappale, Asymptotic analysis of thin structures with point dependent energy growth. *Mathematical Models and Methods in the Applied Science*, 2024, 34(8), 1401–1443.
- [3] Barroso A. C., Matias J., Zappale E. Global Method for Relaxation for Multi-levelled Structured Deformations, *NODEA*, 2024, 31(4), 50.
- [4] Fotso Tachago J., Nnang H. and Zappale, E. Reiterated Homogenization of Non-linear Degenerate Elliptic Operators with non standard growth. *Differential and Integral Equations* (2024) 37. (9/10), 717-752, DOI: 10.57262/die037-0910-717
- [5] G. Gargiulo, E. Zappale, A sufficient condition for the lower semicontinuity of non-local supremal functionals in the vectorial case. *European Journal of Mathematics*, (2023), 9(3),75.
- [6] Barroso A. C., Matias J., Zappale E. Relaxation for an optimal design problem in  $BD(\Omega)$ . *Proceedings of the Royal Society of Edinburgh Section A: Mathematics* 2023, 153(3), 721-763
- [7] Samoilenko, V., Samoilenko, Y., Zappale, E. Asymptotic step-like solutions of the singularly perturbed Burgers equation. 2023, *Physics of Fluids* 35(6),067106
- [8] Kreisbeck, C., Ritorto, A., Zappale, E. Cartesian convexity as the key notion in the variational existence theory for nonlocal supremal functionals. *Nonlinear Analysis, Theory, Methods and Applications* 225,113111, 2022.
- [9] Amar, M., Matias, J., Morandotti, M., Zappale, E. Periodic homogenization in the context of structured deformations. *Zeitschrift für Angewandte Mathematik und Physik* 73(4),173, 2022.
- [10] Barroso, A.C., Matias, J., Morandotti, M., Owen, D.R., Zappale, E. The Variational Modeling of Hierarchical Structured Deformations, *Journal of Elasticity*, 2022, DOI 10.1007/s10659-022-09961-w.
- [11] Barroso, A.C., Matias, J., Zappale, E. Relaxation for an optimal design problem in  $BD(\Omega)$ . *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*, 2023, 153(3), pp. 721–763.
- [12] Kroemer S., Kruzík M., and Zappale E., Relaxation of functionals with linear growth: Interactions of emerging measures and free discontinuities, *Adv. Calc. Var.*, 2023, 16(4), pp. 835–865 <https://doi.org/10.1515/acv-2021-0063>.
- [13] Barroso A. C., and Zappale E. An optimal design problem with non-standard growth and no concentration effects *Asymptotic Analysis*. Jan. 2021 : 1 – 28, DOI: 10.3233/ASY-211711

- [14] Matias J., Morandotti M., Owen D. R. and Zappale, E. Upscaling and spatial localization of non-local energies with applications to crystal plasticity, *Math. Mech. Solids*, **26**, 2021, n. 7, 963–997.
- [15] Fotso Tachago, J. F., Gargiulo, G., Nnang, H. and Zappale, E. Multi-scale homogenization of integral convex functionals in Orlicz Sobolev setting, *Evolution Equations and Control Theory*, (2021), **10**, n. 2, pages=297-320, doi=10.3934/eect.2020067.
- [16] Kreisbeck C. and Zappale E. Loss of double-integral character during relaxation, *SIAM J. Math. Anal.*, **53**, (2021), n. 1, 351–385
- [17] Tachago, J.F., Nnang, H. and Zappale, E. Reiterated periodic homogenization of integral functionals with convex and nonstandard growth integrands, *Opuscula Mathematica*, (2021), **41**, n. 1, 113-143, doi=10.7494/OPMATH.2021.41.1.113.
- [18] Kreisbeck C. and Zappale E. Lower semicontinuity and relaxation of nonlocal  $L^\infty$ -functionals, *Calc. Var. Partial Differential Equations*, **59**, (2020), n. 4, Paper No. 138, 36.
- [19] Prinari F. and Zappale E. A relaxation result in the vectorial setting and  $L^p$ -approximation for  $L^\infty$ -functionals, *J. Optim. Theory Appl.* **186**, (2020), no. 2, 412–452.
- [20] Ferreira, R. and Zappale, E. Bending-torsio moments in thin multi-structures in the context of nonlinear elasticity, *Communications on Pure and Applied Analysis*, (2020), **19**, n. 3, 1747–1793, doi=10.3934/cpaa.2020072.
- [21] Barroso, A.C. and Zappale, E. Relaxation for Optimal Design Problems with Non-standard Growth, *Applied Mathematics and Optimization*, (2019), **80**, n. 2, 515–546, doi=10.1007/s00245-017-9473-6, issn=00954616.
- [22] Zappale, E. and Zorgati, H. A note about weak\* lower semicontinuity for functionals with linear growth in  $W^{1,1} \times L^1$ , *Journal of Elliptic and Parabolic Equations*, (2017), **3**, n. 1-2,93–103,doi=10.1007/s41808-017-0006-x, issn=22969020.
- [23] Kozarzewski, P.A. and Zappale, E. Orlicz equi-integrability for scaled gradients *Journal of Elliptic and Parabolic Equations*, (2017), **3**, n. 1-2, doi=10.1007/s41808-017-0001-2.
- [24] Carita, G. and Zappale, E. Integral representation results in  $BV \times L^p$ , *ESAIM - Control, Optimisation and Calculus of Variations*, (2017), **23**, n. 4, 1555–1599, doi=10.1051/cocv/2016065.
- [25] Matias, J., Morandotti, M. and Zappale, E. Optimal design of fractured media with prescribed macroscopic strain, *Journal of Mathematical Analysis and Applications*, (2017), **449**, n. 2, 1094–1132,doi=10.1016/j.jmaa.2016.12.043. issn=0022247X.
- [26] Zappale, E. A note on dimension reduction for unbounded integrals with periodic microstructure via the unfolding method for slender domains, *Evolution Equations and Control Theory*, (2017), **6**, n. 2, 299–318, doi=10.3934/eect.2017016.

- [27] Carita, G. and Zappale, E. A relaxation result in  $BV \times L^p$  for integral functionals depending on chemical composition and elastic strain, *Asymptotic Analysis*, (2016), **100**, n. 1-2, 1–20, doi=10.3233/ASY-161383, issn=09217134.
- [28] Carita, G. and Zappale, E. Relaxation for an optimal design problem with linear growth and perimeter penalization, *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*, (2015), **145**, n. 2, 223–268, doi=10.1017/S0308210513001479, issn=03082105.
- [29] Amendola, M.E., Gargiulo, G. and Zappale, E. Some remarks about dimension reduction for  $-\Delta_1$ , *Asymptotic Analysis*, (2015), **92**, n. 3-4, 187–202, doi=10.3233/ASY-151296, issn=09217134.
- [30] Ribeiro, A.M. and Zappale, E. Existence of minimizers for nonlevel convex supremal functionals, *SIAM Journal on Control and Optimization*, (2014), **52**, n. 5, 3341–3370, doi=10.1137/13094390X, issn=03630129.
- [31] Amendola, M.E., Gargiulo, G. and Zappale, E. Dimension reduction for  $-\Delta_1$ , *ESAIM - Control, Optimisation and Calculus of Variations*, (2014), **20**, n. 1, 42–77, doi=10.1051/cocv/2013053, issn=12928119.
- [32] Zappale, E. A remark on dimension reduction for supremal functionals: The case with convex domains, *Differential and Integral Equations*, (2013), **26**, n. 9-10, 1077–1090, cited By 2, issn=08934983.
- [33] Ribeiro, A.M. and Zappale, E. Relaxation of certain integral functionals depending on strain and chemical composition, *Chinese Annals of Mathematics. Series B*, (2013), **34**, n. 4, 491–514, doi=10.1007/s11401-013-0784-x, issn=02529599.
- [34] Carita, G. and Zappale, E.  $3D - 2D$  dimensional reduction for a nonlinear optimal design problem with perimeter penalization. *Comptes Rendus Mathematique*, (2012), **350**, n.23–24, 1011–1016, doi=10.1016/j.crma.2012.11.005, issn=1631073X.
- [35] Babadjian, J.-F., Prinari, F. and Zappale, E. Dimensional reduction for supremal functionals, *Discrete and Continuous Dynamical Systems*, (2012), **32**, n. 5, 1503–1535, doi=10.3934/dcds.2012.32.1503, issn=10780947.
- [36] Carita, G., Ribeiro, A.M. and Zappale, E. An homogenization result in  $W^{1,p} \times L^q$ , *Journal of Convex Analysis*, (2011), **18**, n. 4, 1093–1126, note=cited By 3, issn=09446532.
- [37] Gargiulo, G. and Zappale, E. A lower semicontinuity result in SBD for surface integral functionals of Fracture Mechanics, *Asymptotic Analysis*, (2011), **72**, n.3-4, 231–249. doi=10.3233/ASY-2011-1032, issn=09217134.
- [38] Gaudiello, A. and Zappale, E. A model of joined beams as limit of a 2D plate, *Journal of Elasticity*, (2011), **103**, n. 2., 205–233, doi=10.1007/s10659-010-9281-6, issn=03743535.

- [39] Gargiulo, G. and Zappale, E. Some sufficient conditions for lower semicontinuity in SBD and applications to minimum problems, *Mathematical Methods in the Applied Sciences*, (2011), **34**, n. 12, 1541–1552, doi=10.1002/mma.1464, issn=01704214.
- [40] Zappale, E. and Zorgati, H. Some relaxation results for functionals depending on constrained strain and chemical composition, *Comptes Rendus Mathematique*, (2009), **347**, n. 5-6, 337–342, doi=10.1016/j.crma.2009.01.024, issn=1631073X.
- [41] Babadjian, J.-F., Zappale, E. and Zorgati, H. Dimensional reduction for energies with linear growth involving the bending moment. *Journal des Mathematiques Pures et Appliquees*, (2008), **90**, n. 6, 520–549, doi=10.1016/j.matpur.2008.07.003, issn=00217824
- [42] Santos, P.M. and Zappale, E. Lower semicontinuity in SBH, *Mediterranean Journal of Mathematics*, (2008), **5**, n.2, 221–235, doi=10.1007/s00009-008-0146-1, issn=16605446.
- [43] Gargiulo, G. and Zappale, E. A lower semicontinuity result in SBD, *Journal of Convex Analysis*, (2008), **15**, n.1, 191–200, issn=09446532.
- [44] Gargiulo, G. and Zappale, E. A remark on the junction in a thin multi-domain: The non convex case, *Nonlinear Differential Equations and Applications*, (2007), **14**, n.5-6, 699–728, doi=10.1007/s00030-007-5046-8, issn=10219722.
- [45] Gargiulo, G., Zappale, E. and Zorgati, H. Curved nonsimple grade-two thin films [Modélisation de films courbés non simples de second gradient], *Comptes Rendus Mathematique*, (2007), **344**, n. 5, 343–347, doi=10.1016/j.crma.2007.01.018, issn=1631073X.
- [46] Gargiulo, G. and Zappale, E. The energy density of non simple materials grade two thin films via a Young measure approach, *Bollettino della Unione Matematica Italiana B*, (2007), **10**, n. 1, 159–194, issn=03924041.
- [47] Baía, M. and Zappale, E. A note on the  $3D - 2D$  dimensional reduction of a micromagnetic thin film with nonhomogeneous profile, *Applicable Analysis*, (2007), **86**, n. 5, 555–575, doi=10.1080/00036810701233942, issn=15226514.
- [48] Gaudiello, A. and Zappale, E. Junction in a thin multidomain for a fourth order problem, *Mathematical Models and Methods in Applied Sciences*, (2006), **16**, n. 12, 1887–1918, doi=10.1142/S0218202506001753, issn=02182025.
- [49] Gargiulo, G., Iovane G., and Zappale, E. A Cantorian potential theory for describing dynamical systems on El Naschie’s space-time, *Chaos, Solitons and Fractals*, (2006), **27**, n. 3, 588–598, doi=10.1016/j.chaos.2005.05.015, issn=09600779.
- [50] De Arcangelis, R. and Zappale, E. The Relaxation of Some Classes of Variational Integrals with Pointwise Continuous-Type Gradient Constraints, *Applied Mathematics and Optimization*, (2005), **51**, n.3, 251–277, doi=10.1007/s00245-004-0811-0, issn=00954616.

- [51] De Arcangelis, R., Monsurrò, S. and Zappale, E. On the relaxation and the Lavrentieff phenomenon for variational integrals with pointwise measurable gradient constraints, *Calculus of Variations and Partial Differential Equations*, (2004), **21**, n. 4, 357–400, doi=10.1007/s00526-003-0259-0,issn=09442669.
- [52] Santos, P. M. and Zappale, E. Second-order analysis for thin structures, *Non-linear Analysis, Theory, Methods and Applications*, (2004), **56**, n. 5, 679–713, doi=10.1016/j.na.2003.10.007, issn=0362546X.
- [53] Fonseca, I. and Zappale, E. Multiscale Relaxation of Convex Functionals, *Journal of Convex Analysis*, (2003), **10**, n. 2, 325–350, issn=09446532.
- [54] Zappale, E., On the homogenization of Dirichlet minimum problems, *Ricerche Mat.*, **51**,(2002) n. 1, 61–92.

**Lavori accettati su rivista internazionale**

- [55] Ribeiro A. M., Zappale E. Revisited convexity notions for  $L^\infty$  variational problems., *Revista Matematica Complutense*
- [56] Fotso Tachago J., Tchinda F., Nnang H., Zappale E., (Two-scale)  $W^1L^\Phi$ -gradient Young measures and homogenization of integral functionals in Orlicz-Sobolev spaces *Journal of Elliptic and Parabolic Equations*
- [57] Samolienko V., Samolienko Y., Zappale E., Nonlinear WKB method, asymptotic soliton-like solutions of variable coefficients Korteweg–de Vries equations with singular perturbation and Rankine–Hugoniot-type conditions. *Analytical and Approximate Methods for Complex Dynamical Systems, Proceedings*

**Articoli non presenti su Scopus o WOS - presenti su MathSciNet**

- [58] Ribeiro, A. M. and Zappale, E. Lower semicontinuous envelopes in  $W^{1,1} \times L^p$ , *Calculus of variations and PDEs*, *Banach Center Publ.*, **101**, 187–206, *Polish Acad. Sci. Inst. Math.*, Warsaw, (2014), <https://doi.org/10.4064/bc101-0-15>.
- [59] Carita, G., Ribeiro, A. M. and Zappale, E. Relaxation for some integral functionals in  $W_w^{1,p} \times L_w^q$ , *Bol. Soc. Port. Mat.*, (2010), Special Issue, 47–53.
- [60] Gargiulo, G., Zappale, E. and Zorgetti, H. Curved thin films made of non simple grade two materials, *Adv. Math. Sci. Appl.*, **18**, (2008), n. 1, 219–236.
- [61] Monsurrò, S. and Zappale, E. On the relaxation and homogenization of some classes of variational problems with mixed boundary conditions. *Rev. Roumaine Math. Pures Appl.*, **51**, (2006), n. 3, 345–363.

**Atti di Convegno**

- [62] Fotso Tachago J., Nnang, H. and Zappale, E. Relaxation of periodic and non-standard growth integrals by means of two-scale convergence, *Integral methods in science and engineering*, (2019) 123–131, *Birkhäuser/Springer*, Cham.

- [63] Tachago, J.F., Gargiulo, G., Nnang, H., Zappale, E. (2023). Some Convergence Results on the Periodic Unfolding Operator in Orlicz Setting. In: Constanda, C., Bodmann, B.E., Harris, P.J. (eds) Integral Methods in Science and Engineering. IMSE 2022. Birkhäuser, Cham. [https://doi.org/10.1007/978-3-031-34099-4\\_29](https://doi.org/10.1007/978-3-031-34099-4_29)
- [64] Barroso, A.C., Matias, J., Zappale, E. (2024). Some Optimal Design Problems with Perimeter Penalisation. In: Beirão da Veiga, H., Minhós, F., Van Goethem, N., Sanchez Rodrigues, L. (eds) Nonlinear Differential Equations and Applications. PICNDEA 2022. CIM Series in Mathematical Sciences, vol 7. Springer, Cham. [https://doi.org/10.1007/978-3-031-53740-0\\_1](https://doi.org/10.1007/978-3-031-53740-0_1)
- [65] Gargiulo, G., Samoilenko, V., Zappale, E. (2024). Power Law Approximation Results for Optimal Design Problems. In: Beirão da Veiga, H., Minhós, F., Van Goethem, N., Sanchez Rodrigues, L. (eds) Nonlinear Differential Equations and Applications. PICNDEA 2022. CIM Series in Mathematical Sciences, vol 7. Springer, Cham. [https://doi.org/10.1007/978-3-031-53740-0\\_6](https://doi.org/10.1007/978-3-031-53740-0_6)

### Lavori sottomessi per la pubblicazione

- Carvalho G., Matias J., Zappale E. Asymptotic analysis of a clamped thin multidomain allowing for fractures and discontinuities
- Ferreira R., Matias J., Zappale E. Junction in a thin multi-domain for nonsimple grade two materials in  $BH$ ,
- Kroemer S., Kruzik M., Morandotti M., Zappale E. Measure structured deformations
- Fotso Tachago J., Gargiulo G., Nnang H., Zappale E. Homogenization of non-convex integral energies with Orlicz growth via periodic unfolding
- Bertazzoni G., Eleuteri M., Zappale E., Approximation of  $L^\infty$  functionals with generalized Orlicz norms

Salerno, 30 luglio 2024

La Dichiarante

