

**Valutazione comparativa per il conferimento di incarico di insegnamento per il corso di dottorato presso l'Area Matematica - SISSA -**

**INTERESSI DI RICERCA**

Equazioni differenziali alle derivate parziali, Geometria differenziale, metodi variazionali e perturbativi.

**TITOLI DI STUDIO**

- Laurea in Matematica Università di Trieste Nov 1984
- Magister Philosophiae in Functional Analysis and Applications SISSA, Trieste, Nov 1986
- Doctor Philosophiae in Functional Analysis and Applications SISSA, Trieste, Nov 1988

**BORSE DI STUDIO**

- Visiting Researcher SISSA, Trieste Dic. 1984 -- Ott. 1985
- Ph.D. Fellowship SISSA, Trieste Nov. 1985 -- Nov. 1988
- Post--doc Fellowship ICTP, Trieste. Supervisor: Prof. J. Eells 1989/1990

**POSIZIONI ACCADEMICHE**

- Professore Associato, gr. discipline MAT/05, Analisi Matematica Università di Udine, da Nov 1993
- Professore Associato, gr. discipline MAT/05, Analisi Matematica, Università di Parma Nov 1992 - Ott 1993
- Ricercatore in Analisi Funzionale SISSA, Trieste, Giugno 1990 - Ott 1992

**ATTIVITÀ DIDATTICA e cicli di conferenze** Per studenti di Dottorato e Post--Dottorato

- ICTP, Trieste 1990 Variational methods for nonlinear elliptic systems
- SISSA, Trieste 1990/1991 Differential forms on Riemannian manifolds and applications to degree theory
- SISSA, Trieste 1991/1992 Critical point theory, Palais--Smale condition and the concentration--compactness Lemma
- Università di Udine 2001/2002 Calcolo delle Variazioni
- SISSA, Trieste 2002 Parametric surfaces with prescribed mean curvature
- SISSA, Trieste 2008 Hardy inequalities and applications
- SISSA, Trieste 2010 Loops and bubbles
- SISSA, Trieste 2011 Limiting Sobolev type inequalities
- TIFR Bangalore, India 2012 The Sacks-Uhlenbeck approach to noncompactness

**Ph. D. Students (SISSA):**

- Marita Gazzini, Ph.D. SISSA, Tesi difesa Ottobre 2008.
- Luca Battaglia, Ph.D. SISSA.
- controrelatore della tesi Ph. D. di Andrea Mondino (Sett. 2011).

**Post Doc. Students**

- Mousomi Bhakta, TIFR Bangalore: Settembre-Novembre 2011.

**PROGETTI DI RICERCA**

- Coordinatore del progetto di ricerca Equazioni differenziali ellittiche in geometria differenziale ed in fisica matematica , 2002/2003, finanziato dalla Regione Friuli--Venezia Giulia.
- Attualmente partecipa al Progetto finanziato Miur : Fenomeni di concentrazione e problemi di analisi geometrica, Coordinatore Nazionale Andrea Malchiodi. PRIN 2009 -WRJ3W7-001
- Problemi Nonlineari: Equazioni ellittiche e Sistemi Hamiltoniani, Coordinatore Nazionale Antonio Ambrosetti, PRIN 2004 – 2004015205\_001 (2004-2006)
- Problemi Nonlineari: Equazioni ellittiche e Sistemi Hamiltoniani, Coordinatore Nazionale Antonio Ambrosetti, PRIN 2002 – 2002012382\_001 (2002-2005)

- Teoria dei Punti Critici ed Equazioni Differenziali Nonlineari, Coordinatore Nazionale Antonio Ambrosetti, PRIN 2000 – MM01452349\_001 (2000-2003)
- Metodi variazionali, controllo ottimo, omogeneizzazione e applicazioni, Coordinatore Nazionale Luigi Ambrosio, PRIN 1997 – 9701226040\_011 (1999-2000)

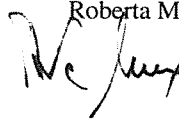
#### **ORGANIZZAZIONE DI CONVEGNI**

- Nonlinear Partial Differential Equations and connected geometrical problems, Grado (GO), Settembre 2003. Cofinanziato da GNAMPA e Regione Friuli Venezia Giulia
- Partial Differential Equations and Variational Problems, Udine, Ottobre 1999. Finanziato da: Dipartimento di Matematica ed Informatica e Dipartimento di Ingegneria Civile, Università di Udine

La sottoscritta, dichiara di essere informata, ai sensi e per gli effetti di cui al D.Lgs. 30.06.03, n.196, e s.m.i., che i dati raccolti saranno trattati, anche con strumenti informatici, esclusivamente nell'ambito del procedimento per il quale le presenti dichiarazioni vengono rese.

In fede,

Roberta Musina



Data 07/02/2013

Roberta Musina

*List of publications*

**Preprints**

- [41] Musina R., Sreenadh K., *Finite energy solutions to the Hénon-Lane-Emden system on the critical hyperbola*, preprint ArXiv:1302.0996 (2013).
- [40] Musina R., *Weighted Sobolev spaces of radially symmetric functions*, preprint arXiv:1206.6957 preprint arXiv:1206.6957 (2012).
- [39] Caldiroli P., Musina R., *A class of second order dilation invariant inequalities*, preprint arXiv:1210.5705 (2012), to appear on Birkhäuser Proceedings (Bangalore, 2012) .

**Research papers**

- [38] Fall M.M., Musina R., *Hardy–Poincaré inequalities with boundary singularities*, Proc. Roy. Soc. Edinburgh Sect. A 142 (4) (2012), 769–786.
- [37] Caldiroli P., Musina R., *Rellich inequalities with weights*, Calc. Var. Partial Differential Equations 45 (2012), 147–164.
- [36] Bhakta M., Musina R. *Entire solutions for a class of variational problems involving the biharmonic operator and Rellich potentials* Nonlinear Anal. 75 (2012), 3836–3848.
- [35] Caldiroli P., Musina R., *on Caffarelli–Kohn–Nirenberg type inequalities for the weighted biharmonic operator in cones*, Milan J. of Mathematics 79 (2011), 657–687.
- [34] Fall M.M., Musina R., *Sharp nonexistence results for a linear elliptic inequality involving Hardy and Leray potentials*, J. Inequal. Appl. 2011 (2011).
- [33] Musina R., *Planar loops with prescribed curvature: existence, multiplicity and uniqueness results*, Proc. Amer. Math. Soc. 139 (2011), 4445–4459.
- [32] Caldiroli P., Musina R., *Bubbles with prescribed mean curvature: the variational approach*, Nonlinear Anal. 74 (2011), 2895–2999.

- [31] Musina R., *Existence and multiplicity results for a weighted  $p$ -Laplace equation involving Hardy potentials and critical nonlinearities*, Rend. Lincei Mat. Appl. 20 (2009), 1–17.
- [30] Musina R., *Existence of extremals for the Maz'ya and for the Caffarelli–Kohn–Nirenberg inequalities*, Nonlinear Anal. 70 (2009), 3002–3007.
- [29] Musina R., *A note on the paper "Optimizing improved Hardy inequalities" by S. Filippas and A. Tertikas*, J. Funct. Anal. 256 (2009), 2741–2745.
- [28] Gazzini M., Musina R., *On a Sobolev type inequality related to the weighted  $p$ -Laplace operator*, J. Math. Anal. Appl. 352 (2009), 99–111.
- [27] Gazzini M., Musina R., *On the Hardy–Sobolev–Maz'ja inequalities: symmetry and breaking symmetry phenomena*, Commun. Contemp. Math. 11 (6) (2009), 993–1007.
- [26] Musina R., *Ground state solutions of a critical problem involving cylindrical weights*, Nonlinear Anal., 68 (2008), 3972–3986.
- [25] Caldiroli P., Musina R., *Weak limit and blow up of approximate solutions to  $H$ -systems*, J. Funct. Anal., 249 (2007), 171–198.
- [24] Musina R., *On the regularity of weak solutions to  $H$ -systems*, Rend. Lincei Mat. Appl., 18 (2007), 209–220.
- [23] Caldiroli P., Musina R., *On Palais–Smale sequences for  $H$ -systems*, Adv. Diff. Equations., 11 (2006), 931–960.
- [22] Caldiroli P., Musina R., *On the Dirichlet problem for  $H$ -systems with small boundary data: blow up phenomena and nonexistence results*, Arch. Ration. Mech. Anal. 181 (2006), 1–42.
- [21] Musina R., *The role of the spectrum of the Laplace operator on  $\mathbb{S}^2$  in the  $H$ -bubble problem*, J. Anal. Math. 95 (2005), 265–291.
- [20] Caldiroli P., Musina R.,  *$H$ -bubbles in a perturbative setting: the finite-dimensional reduction method*, Duke Math. J. 122 (2004), 457–484.
- [19] Caldiroli P., Musina R., *Existence of  $H$ -bubbles in a perturbative setting*, Rev. Mat. Iberoamericana 20 (2004), 611–626.

- [18] Caldiroli P., Musina R., *Existence of minimal  $H$ -bubbles*, Commun. Contemp. Math. 4 (2002), 177–209.
- [17] Caldiroli P., Musina R., *Existence and non existence results for a class of nonlinear singular Sturm–Liouville equations*, Adv. Diff. Equations 6 (2001), 303–326.
- [16] Caldiroli P., Musina R., *Stationary states for a two-dimensional singular Schrödinger equation*, Boll. Unione Mat. Ital. Sez. B Artic. Ric. Mat. (8) 4–B (2001), 609–633.
- [15] Caldiroli P., Musina R., *On a class of 2-dimensional singular elliptic problems*, Proc. Roy. Soc. Edinburgh Sect. A 131 (2001), 479–497.
- [14] Caldiroli P., Musina R., *On a variational degenerate elliptic problem*, NoDEA Nonlinear Differential Equations Appl. 7 (2000), 187–199.
- [13] Caldiroli P., Musina R., *On the existence of extremal functions for a weighted Sobolev embedding with critical exponent*, Calc. Var. Partial Differential Equations 8 (1999), 365–387.
- [12] Coti Zelati V., Dobarro F., Musina R., *Prescribing scalar curvature in warped product*, Ricerche Mat. 46 (1997), 61–76.
- [11] Musina R., *Multiple positive solutions of a scalar field equation in  $\mathbb{R}^n$* , Topol. Methods Nonlinear Anal. 7 (1996), 171–185.
- [10] Musina R., *Lower bounds for the  $p$ -energy and a minimization property of the map  $\frac{x}{|x|}$* , Ricerche Mat. 43 (1994), 335–346.
- [9] Mancini G., Musina R., *The role of the boundary in some semilinear Neumann problems*, Rend. Sem. Mat. Univ. Padova 88 (1992), 127–138.
- [8] Chen Y.M., Musina R., *Harmonic mappings into manifolds with boundary*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. 17(1990), 365–392.
- [7] Musina R., *On the continuity of the Nemitsky operator induced by a Lipschitz continuous map*, Proc. Amer. Math. Soc. 111 (1991), 1029–1041.
- [6] Dal Maso G., Musina R., *An approach to the thin obstacle problem for variational functionals depending on vector valued functions*, Comm. Partial Differential Equations 14(1989), 1717–1743.



- [5] Musina R.,  $S^2$ -type minimal surfaces enclosing many obstacles in  $\mathbb{R}^3$ , Rend. Istit. Mat. Univ. Trieste 20 (1988), 187–201.
- [4] Mancini G., Musina R., Surfaces of minimal area enclosing a given body in  $\mathbb{R}^3$ , Ann. Scuola Norm. Sup. Pisa. Cl. Sci. 16 (1989), 332–354.
- [3] Musina R.,  $H$ -superfici con ostacolo, Ann. Univ. Ferrara Sez. VII (N.S.) 34 (1988), 1–14.
- [2] Mancini G., Musina R., Holes and obstacles, Ann. Inst. H. Poincaré Anal. Non Linéaire 5 (1988), 323–345.
- [1] Mancini G., Musina R., A free boundary problem involving limiting Sobolev exponents, Manuscripta Math. 58 (1987), 77–93.

#### Research announcements

- [A2] Chen Y.M., Musina R., Le flot d'applications harmoniques d'une variété compacte sur une variété à bord, C.R. Acad. Sci. Paris. Sér. I Math. 309 (1989), 499–501.
- [A1] Mancini G., Musina R., Sur un problème à frontière libre dans le cas limite des injections de Sobolev, C.R. Acad. Sci. Paris. Sér. I Math. 303 (1986), 959–962.

#### Conference proceedings

- [P4] Caldiroli P., Musina R., On the Dirichlet problem for  $H$ -systems on the disc with prescribed mean curvature. EQUADIFF 2003, 525–530, World Sci. Publ., Hackensack, NJ, 2005.
- [P3] Caldiroli P., Musina R.,  $S^2$ -type parametric surfaces with prescribed mean curvature and minimal energy. Nonlinear equations: methods, models and applications (Bergamo, 2001), 61–77, Progr. Nonlinear Differential Equations Appl., 54, Birkhuser, Basel, 2003.
- [P2] Musina R., Variational problems with obstacles and harmonic maps. Nematics (Orsay, 1990), 279–290, NATO Adv. Sci. Inst. Ser. C Math. Phys. Sci., 332, Kluwer Acad. Publ., Dordrecht, 1991.
- [P1] Mancini G., Musina R., Surfaces of minimal area supported by a given body in  $\mathbb{R}^3$ . Variational methods (Paris, 1988), 319–327, Progr. Nonlinear Differential Equations Appl., 4, Birkhuser Boston, Boston, MA, 1990.