

# Dr. Marco Antonio Teixeira:

## Curriculum Vitae

June 2010

### 1- Personal Details

*Full Name:* Marco Antonio Teixeira

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### 2- Qualifications

a) Ph.D. Mathematics,

IME-University of Sao Paulo

Conferred May 1975

b) M.Sc. Mathematics,

ICMC-University of Sao Paulo, 1971

### 3- Career

Senior Lecturer in Mathematics, Unicamp, Aug 1989 - Present

Lecturer in Mathematics, Unicamp, Mar 1969 - August 1989

### 4- Talks since 2006

2006

a) School and Workshop on Dynamical Systems- IMPA-Rio: "Invariant varieties for relay systems"- Janeiro

b) Barcelona conference in Planar Vector Fields- UAB- Barcelona: "Degenerate resonances for reversible systems"- February

c) ICMC Summer Meeting in Differential Equations-USP-SC- 2006: Invariant varieties for discontinuous systems"- February

d) Colquio-IME-USP: Estabilidade Assinttica Global de Campos Vetoriais Descontnuos no Plano- April

e) I Jornadas Colombianas de Sistemas Dinmicos, JCSD 2006: "Invariant varieties for relay systems" - Islantilla, Huelva, Espaa- June.

f) I Workshop de Matemtica UFV-UFSJ: "Introduo a Estabilidade Estrutural"- Vicos-August.

g) Colquio-PUC-Rio: Estabilidade Assinttica Global de Campos Vetoriais Descontnuos no Plano- September

h) Colquio IME-USP: Periodic orbits and Averaging: September

i) II Reunio Regional de Sistemas Dinmicos da UNESP: IBIICE/ "Introduo a Estabilidade Estrutural"- September

j) Semana da Matemtica da U. E. F.S.- Feira de Santana/ "Introduo a Estabilidade Estrutural"- Outuber.

l) Symposium of Dynamical Systems- UFBA- Salvador/ "Family of minimal sets in reversible systems" - October

m) General Conference - Universidade da Bourgogne, Dijon Frana: Global Asymptotic Stability for Discontinuous Vector Fields- November

n) Universidade of Hasselt, Hasselt, Bélgica, Global Asymptotic Stability for Discontinuous Vector Fields- November.

2007

a) CRM (Centre de Recerca Matemática)- Barcelona - Complex Non-Smooth Dynamical Systems. Research thematic activity for the period January to March, 2007. Co-ordinators: M. di Bernardo, E. Fossas (UPC, Barcelona), and S. Hogan (University of Bristol): Singularities of non-smooth dynamical systems- January

b) VI Mini-Workshop em Singularidades, Geometria e Equações Diferenciais/Na direção de bifurcação de Sistemas Descontínuos

February

c) ICMC Summer Meeting in Differential Equations - 2007 /Periodic orbits and Averaging , February

d) Facultat de Matemàtiques, Universitat de Barcelona, Invariant varieties of relay systems, May.

e) Facultat de Matemàtiques i Estadística, U. Politécnica de Catalunya- Singularities of reversible dynamical systems, May

d) SPT 2007-Symmetry and Perturbation Theory-, Otranto (Lecce-Italy) / Singularities of non-smooth dynamical systems, June.

e) Primeiro Encontro IST-IME- 10-15 , IME-USP, Families of Minimal sets in Reversible Systems. , September.

2008

a) University of Bristol; Engineering Mathematics Dep., UK- Non-smooth systems, March.

b) Universitat de Lleida, Es., Reversible Systems, April.

c) Facultat de Matemàtiques, Universitat de Barcelona, April/ Title: Minimal sets in reversible systems.

d) 10th International Workshop on Real and Complex Singularities, ICMC-USP- August: Non-smooth dynamical systems.

2009

a) VII Mini-Workshop on Singularities, ICMC-USP, Nonsmooth Dynamical Systems: questions and concerns, (January)

b) "Workshop on Resonance Oscillations and Stability of Nonsmooth Systems" in Imperial College, London (16/06 a 25/06/2009):

i) "Stability of Discontinuous Systems" (June)

ii) "Symmetries and Bifurcation in Non-smooth Systems" (June).

2010

b) Brazilian School of Dynamical Systems, Maceió/ 3 a 12 de fevereiro, : Introduction of Non-smooth dynamical Systems.

c) ICMC Summer Meeting on Differential Equations - 2010, 8-10 de Fevereiro,; Stability of Non-smooth Systems

d) SIAM Emerging Topics in Dynamical Systems and PDE, 2010, May 31-June 4, UPC-Barcelona: Non-smooth dynamical systems and Singular Perturbation Problems

## 5- Selected Publications

1. Generic Bifurcation in Manifolds with Boundary, **J. of Diff. Equations** - **25**, I , pp- 68-89, (1977)
2. Generic Bifurcation of Discontinuous Vector Fields, Anais da Ac. Bras. de Ciências - **52** (2) (257-260), (1981)
3. Local and Simultaneous Structural Stability of Certain Diffeomorphisms - **Lecture Notes in Mathematics (Springer-Verlag)** , **898** (382-390), (1981)
4. On Topological Stability of Diagrams of Folds, **Math. Zeitschrift** - **180** (361-371), (1982)
5. Sur la 5 - Determination de Quelques Diffeomorphisms C.R. Ac. Sc. Paris t- **294** (545-548), (1982)
6. Vector fields in the vicinity of a circle of critical points (with J. Mattei) - **Trans. of Amer. Math. Soc.**, **297** (1), 1986, 369-381.
7. Stability conditions for discontinuous vector fields, **J. of Diff. Eq.**, **88**, 1990, 15-29.
8. Generic Bifurcation of Sliding Vector Fields; **J. of Math. Anal. and Applic**, **176**, , n° 2, 1993 , 436-457.
9. Topological equivalence of diffeomorphisms and curves (with C. Bonatti) , **J. of Diff. Eq.**, **118**, No 2, (1995), 371-379.
10. Asymptotic Stability at Infinity of Planar Vector Fieds; (with Carlos Gutierrez) , **Bulletin of Brazilian Mathematical Society** **26** , N.1, (1995) ,57-66.
11. Singularities of Reversible Vector Fields, **Physica D**, **100**, (1997), 101-118.
12. Regularization of discontinuous v.f. on a 2-dimensional manifold, (with J. Sotomayor), International Conference on Diff. Equations 95, (Equadiff-95), Lisbon, World Sc., (1998), ,Singapore, N. Jersey, London, 207-223.
13. Reversible normal forms of degenerate cusps for planar diffeomorphisms, (com A. Jacquemard) , **Bull. des Sciences Mathematiques**, **122**, (1998), 409-425.
14. A version of Rolle's theorem and applications , (with Elves. A.B. Silva); **Bulletin of Brazilian Mathematical Society**, **29**, N. 2 (1998), 301-327.
15. Symmetric singularities of reversible vector fields in 3D, ( com J.C.R. Medrado); **Physica D**, **112** , (1 – 2) (1998), 122-131.

16. The center-focus problem and reversibility; (com J. Yang) **J. of Diff. Eq.**, **V.174, No 1** (2001), 237-251.
17. Vector fields near the boundary of a 3-manifold (with J. Sotomayor), **Lect. Notes in Math.**, **331**, Springer Verlag, 1988, 169-195.
18. The center-focus problem and reversibility; (with J. Yang) **J. of Diff. Eq.**, **V.174, No 1** (2001), 237-251..
19. Hopf-zero bifurcations of reversible vector fields (with C. Buzzi and J. Yang); **Nonlinearity** **14** (2001), no. 3, 623–638.
20. Computer analysis of periodic orbits of discontinuous fields ; (with A. Jacquemard) , **Journal of Symbolic Computation**, V. 35 (2003)}, 617-636.
21. On singularities of discontinuous vector fields, (with A. Jacquemard) - **Bull. Sc. Mathematiques** ,V. **127**, Issue 7 , ( 2003), 611-633.
22. Singular perturbation problems for time-reversible systems: (with C. Buzzi and P.R. Silva) **Proceedings of AMS-** **133**, No.11, 3323-3331 (2005).
23. Divergent diagrams of folds and simultaneous conjugacy of involutions; (with S Mancini, M Manoel ):**Vol. 12**, N. 4 **Discrete and Continuous Dynamical Systems** (DCDS) (2005), 657-674.
24. Invariant varieties for discontinuous vector fields: (with A. Jacquemard) , **Nonlinearity**,**Volume 18**, Number 1, 2005 Number 1, 21-45.
25. Heteroclinic bifurcations near Hopf-zero bifurcation in reversible vector fields in  $\mathbb{R}^3$  (withJ. Lamb and K. Webster): **J. of Diff. Equations** **219** , no.1, 78 – –115.(2005).
26. A singular approach to discontinuous vector fields on the plane : (with Claudio A Buzzi and Paulo R da Silva); **J. of Differential Eq.**, **V. 23** (2006), 633-655.
27. Degenerate Resonances and Branching of Periodic Orbits, (with A. Jacquemard and M. F. Silva Lima), **Annali di Matematica Pura ed Applicata** , **V.187**, No 1, (2008), 105-117..
28. The Conley Index for Discontinuous Vector Fields (with R. Casagrande and K. de Resende) **Geometriae Dedicata**, Volume 136, Number 1, 47-56 / October, 2008.
29. "Sliding vector fields via slow-fast systems" (with Jaume Llibre and Paulo R. Da Silva), **Bull. Belg. Math. Soc. Simon Stevin** 15 (2008), 851–869
30. Symmetric periodic orbits near a heteroclinic loop in  $\mathbb{R}^3$  formed by two singular points, a semistable periodic orbit and their invariant manifolds (with Corbera M and Jaume Llibre ). **Physica D**, V. 238 , pp. 699- 705, 2009.

31. Limit cycles bifurcating from a  $2\delta$ -dimensional isochronous cylinder (with J. Llibre) , **Appl. Math. Letters**, V. 22, 1231-1234 2009.
32. Study of singularities in non-smooth dynamical systems via singular perturbation, (with J. Llibre and P.R. Silva), **SIAM Journal on Applied Dynamical Systems**, Vol.8, No.1, pp. 508-526, 2009.
33. Families of periodic orbits in resonant vector fields (with M. Lima), **Bulletin of Brazilian Mathematical Society, New Series 40 (4)**, 511-527 (2009).
34. Perturbation Theory for Non-smooth Systems. In Meyers, Robert (Ed.) - **Encyclopedia of Complexity and Systems Science**, Vol 22 (Perturbation Teory), pp 6697-6719. **Springer** New York, 2009.
35. "Branching of Periodic Orbits in Reversible Hamiltonian Systems", (with C. Buzzi and L.A. Roberto), to appear in **London Mathematical Society Lecture Notes** , (2010).
36. Limit Cycles of the generalized polynomial Lienard differential equations, (with J. llibre and A.C. Mereu) , **Math. Proc. Camb. Philos. Soc.** 148, No. 2, 363-383 (2010).
37. Invariant tori filled with of periodic orbits for 4-dimensional  $C^2$  differential systems in presence of resonance (with J. llibre and A.C. Mereu) , to appear in **International Journal of Bifurcation and Chaos**.

**6- Students:**

- i)3 PhD current students.
- ii) Supervision of 7 Phd thesis
- iii)Supervision of 15 Master thesis
- iv) Supervision of 5 Pos-Doc Programs