CURRICULUM VITAE

1 Personal data

- Name: **João Batista da Paz Carvalho**
- Work address: Av Bento Gonçalves 9500, office 43112-222, Porto Alegre, RS, Brazil, 91509-900
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2 Work Experience

- Sep 2002 - present: Associate Professor at *Universidade Federal do Rio Grande do Sul*, Brazil.
- Jan 2001 - Aug 2002: Graduate Research Assistant - PhD. Program in Mathematics, Northern Illinois University. Working with professor Biswa Nath Datta (scientific advisor, fellow of IEEE) under NSF Grant ECS-0074411.
- Aug 1998 - Dec 2000: Graduate Teaching Assistant - PhD. Program in Mathematics, Northern Illinois University.
- Mar 1997 - Aug 2002 : Assistant Professor at *Universidade Federal do Rio Grande do Sul*, Brazil.
- Mar 1996 - Feb 1997 : Calculus Instructor at *Universidade Federal do Rio Grande do Sul*, Brazil.

3 Education

- August 98 - Dec 2002: Ph.D. in Mathematics, Northern Illinois University, DeKalb, IL, USA. Thesis title: *State Estimation and Finite Element Model Updating for Vibrating Systems*. Advisor: Prof. Biswa Datta.
- March 94-March 96: M.Sc. in Computational and Applied Mathematics. Master program in Applied Mathematics, *Universidade Federal do Rio Grande do Sul*. Title of dissertation: *An implementation of the Projected Gradient Method in the solution of the nonlinear control problem of the catalytic converter.*

- B.Sc. in Computational and Applied Mathematics . College of Mathematics, Universidade Federal do Rio Grande do Sul. Degree obtained in Dec, 1993

4 Fellowships

- Doctorate Fellowship by Brazilian CAPES, September 1999-August 2002.
- Brazilian CAPES Research Assistantship, March 94-March 96. Advisor: Prof.Julio Claeyssen.
- Brazilian CNPq (Brazilian Research Council) Undergraduate Fellowship, March 90-Feb 94. Advisor: Prof. Mark Thompson.

5 Scientific background

5.1 Publications

- Eigenvalue Embedding in Finite Element Model Updating of Gyroscopic Second-Order Vibrating Structures. Proc. 6th Brazilian Conference on Dynamics, Control and Their Applications, 696 - 704, S.J.Rio Preto, Brasil, 2006.
- Simmetry preserving eigenvalue embedding in finite-element model updating of vibrating structures (with Biswa N. Datta, Wen-Wei Lin and Chern-Shuh Wang). Journal of Sound and Vibration, **290**, 839-864, 2006.
- Ajuste Multiplo Simultâneo de Autovalores de Sistemas de Segunda Ordem. Proc. IV Congresso Temático de Dinâcirc;mica, Controle e Aplicações da SBMAC. Bauru, SP, Brasil, 2005.
- Observadores Funcionais para Sistemas de Segunda Ordem Generalizados. Proc. III Congresso Temático de Dinâmica, Controle e Aplicações da SBMAC. Ilha Solteira, SP, Brasil, 2004.
- A new block algorithm for full-rank solution of the Sylvester-observer equation. (with K. Datta e Y. Hong). IEEE Transactions on Automatic Control. **48 (12)** , 2223 - 2228, 2003.
- Ajuste de Modelos em Sistemas Vibratórios Conservativos. Proc. II Congresso Temático de Dinâmica, Controle e Aplicações da SBMAC (DINCON), Ago 2003.

- A new block algorithm for solving the Sylvester-observer equation (with K. Datta and Y. Hong). Proc. IEEE International Conference on Decision and Control, Las Vegas, Dec 10-13, 2002.
- An algorithm for generalized Sylvester-observer equation in state estimation of descriptor systems (with B. Datta). Accepted for Proc. IEEE International Conference on Decision and Control, Las Vegas, Dec 10-13, 2002.
- Eigenvalue embedding in a quadratic pencil using symmetric low rank updates (with B. Datta, W. Lin and C. Wang). Proc. Fourth SIAM Conference on Linear Algebra in Signals, Systems, and Control. Boston, 2001.
- A block algorithm for the Sylvester-observer equation arising in state estimation (with B.N.Datta). Proc. IEEE Conference on Decision and Control, Orlando, 3898-3903, 2001.
- A Block Algorithm for Multi-input Eigenvalue Assignment (with B.N.Datta). First IFAC Symposium on System Structure and Control, Oct 2000.
- *The Composite Character of the Twenty-Second Fermat Number* (with Vilmar Trevisan); The Journal of Supercomputing, 9,179-182, 1995.

5.2 Programming languages and computational environments

- Extensive training in FORTRAN and C for UNIX environment. This includes works with the Finite Difference Method, the Finite Element Method, Ordinary and Elliptic Partial Differential equations and Matrix Linear Algebra.
- Extensive training in MATLAB, for either UNIX and Windows environments. This includes works with the Finite Difference Method, the Finite Element Method, Matrix Linear Algebra, Functional approximation using orthogonal basis and Ordinary Differential Equations.
- Training in packages for large-scale computations. This includes works with MPFUN (Multi-Precision High-Performance Package, by D.H. Bailey, 1990), LAPACK (Netlib standard for high-performance Linear Algebra computations) , SPARSE-BLAS (Netlib standard for Sparse Basic Linear Algebra).

Porto Alegre, RS, Brazil, September 20^{th} 2007.

João Batista da Paz Carvalho