JOSÉ ACACIO DE BARROS

San Francisco State University
1600 Holloway Ave
San Francisco, CA 94132

BARROS@SFSU.EDU
(415) 405-2674

ACADEMIC POSITIONS

San Francisco State University, Associate Professor 2013-*Present*
Liberal Studies Department

San Francisco State University, Assistant Professor 2007-2013
Liberal Studies Department

Stanford University, Visiting Associate Professor 2005-2007
Center for the Study of Language and Information (CSLI)

Stanford University, **Visiting Associate Professor** 1998-2000
Center for the Study of Language and Information (CSLI)

Federal University at Juiz de Fora, Associate Professor (tenured) 1997-2011
Physics Department

Brazilian Center for Research in Physics, **Visiting Researcher**
1996-1995
Laboratory for Experimental High Energy Physics (Lafex)

Federal University of Brazil at Juiz de Fora, Associate Professor 1995-1997
Physics Department

Stanford University, Physical Sciences Associate Researcher 1993-1994
Institute for Mathematical Studies in the Social Sciences (IMSSS)

Stanford University, Visiting Postdoctoral Scholar 1991-1993
Institute for Mathematical Studies in the Social Sciences (IMSSS)

EDUCATION

Ph.D., Physics 1991
Brazilian Center for Research in Physics (CBPF), Brazil

M.S., Physics 1989
Brazilian Center for Research in Physics (CBPF), Brazil

B.S., Physics 1988
Federal University at Rio de Janeiro (UFRJ), Brazil

TEACHING EXPERIENCE

San Francisco State University 2007-*Present*
Liberal Studies Program
Taught/developed the following courses.
- *Concepts of the Number System*
- *Concepts of Physics and Chemistry (GE)*
- *Physical Sciences for Elementary School Teachers*
- *Perspectives on Liberal Studies (interdisciplinary research theory)*
- *Liberal Studies Senior Seminars (interdisciplinary research methods)*

Federal University at Juiz de Fora, Brazil 1995-2011

Physics Department, Institute for Exact Sciences

Taught/developed the following courses.

- *Introductory Mechanics (calculus-based)*
- *Introductory Electricity and Magnetism (calculus-based)*
- *Special Relativity*
- *Analytical Mechanics*
- *Classical Mechanics*
- *Foundations of Quantum Mechanics*
- *General Relativity and Cosmology*
- *Impact of Research on Physics Education*
- *Physics of the Brain*
- *Quantum Mechanics*
- *Statistical Mechanics*
- *Advanced Classical Mechanics (graduate level)*
- *Advanced Quantum Mechanics (graduate level)*
- *Quantum Optics (graduate level)*

Stanford University 1993–2011

Taught/co-taught/developed the following courses.

- *Mechanics (calculus based)*
- *Electricity & Magnetism (calculus based)*
- *Philosophy of Physics: Probability and Relativity (graduate level)*

Brazilian Center for Research in Physics (CBPF) 1990

Assisted/lectured as a Teaching Assistant the following graduate-level course.

- *Analytical Mechanics*

REFEREED PUBLICATIONS[1]

1. **de Barros, J. Acacio, Dzhafarov, E., Kujala, J. & Oas, G.** Unifying Two Methods of Measuring Quantum Contextuality. To appear in *Quantum Interactions*.
2. **Carvalhaes, C. G.** & de Barros, J. Acacio (2015). The Surface Laplacian Technique in EEG: Theory and Methods. *International Journal of Psychophysiology,* in Press. Available online at http://dx.doi.org/10.1016/j.ijpsycho.2015.04.023.
3. **de Barros, J. Acacio**, & Oas, G. (2014). Negative probabilities and counterfactual reasoning in quantum cognition. *Physica Scripta,* T163, 014008.
4. **Oas, G.,** de Barros, J. Acacio, & Carvalhaes, C.G. (2014). Exploring non-signalling polytopes with negative probability. *Physica Scripta,* T163, 014034.
5. **de Barros, J. Acacio**. (2014) Decision Making for Inconsistent Expert Judgments Using Signed Probabilities. In H. Atmanspacher, E. Haven, K. Kitto, & D. Raine (Eds.), *Quantum Interaction, Lecture Notes on Computer Science, 257–269*.
6. **Carvalhaes, C.G., de Barros, J. Acacio,** Perrau-Guimarães, M., & Suppes, P.

[1] Boldface indicates main contributing author(s), and asterisks mark undergraduate students.

(2014). The joint use of the tangential electric field and surface Laplacian in EEG classification. In press, *Brain Topography,* 27(1), 84-94.

7. **de Barros, J. Acacio** (2012). Quantum-like model of behavioral response computation using neural oscillators. *BioSystems*, 110, 171–182.
8. **Suppes, P., de Barros, J. Acacio,** & Oas, G. (2012). Phase-Oscillator Computations as Neural Models of Stimulus-Response Conditioning and Response Selection. *Journal of Mathematical Psychology,* 56, 95–117.
9. **de Barros, J. Acacio** (2011). Comments on 'There is no Axiomatic system for the quantum theory.' *International Journal of Theoretical Physics*, *50*, 1828–1830.
10. **Vassilieva, E., Pinto, G.,** de Barros, J. Acacio, & Suppes, P. (2011). Learning Pattern Recognition through Quasi-synchronization of Phase Oscillators. *IEEE Transactions of Neural Networks*, *22*, 84-95.
11. **Augsburg, T., & de Barros, J. Acacio** (2010). Integrating different modes of inquiry for pre-service teachers. In Chary Rangacharyulu & Emmanuel Haven (Eds.), *Proceedings of the First Interdisciplinary CHESS Interactions Conference*. Singapore: World Scientific. (editor reviewed)
12. **de Barros, J. Acacio, & Suppes, P.** (2010). Probabilistic Inequalities and Upper Probabilities in Quantum Mechanical Entanglement. *Manuscrito*, *33*, 55-71.
13. **de Barros**, **J. Acacio,** & Suppes, P. (2009). Quantum mechanics, interference, and the brain. *Journal of Mathematical Psychology*, *53*, 306-313.
14. **Suppes, P.**, & de Barros, J. Acacio (2007). Quantum Mechanics and the Brain. In *Quantum interaction: papers from the AAAI spring symposium*. *Technical report ss-07-08,* 75–82. Menlo Park, CA: AAAI Press.
15. **de Barros**, **J. Acacio,** Corrêa Silva, E. V., Monerat, G. A., Oliveira-Neto, G., Ferreira Filho, L. G., & Romildo*, Jr., P. (2007). Tunneling probability for the birth of an asymptotically de Sitter universe. *Physical Review D, 75*, 104004.
16. **de Barros, J. Acacio, de Mendonça, J. P. R. F., & Pinto-Neto, N.** (2007). Realism in Energy Transition Processes: an example from Bohmian Quantum Mechanics. *Synthese*, *154*, 349–370.
17. **de Barros, J. Acacio, Carvalhaes, C. G.,** de Mendonça, J. P. R. F., & Suppes, P. (2006). Recognition of Words from the EEG Laplacian, *Brazilian Journal of Biomedical Engineering, 21*, 45-59.
18. **de Barros**, **J. Acacio,** Oliveira Neto, G., & Vale, T. B. (2005). Bohmian Trajectories for Evaporating Black-Holes. *Physics Letters A, 336*, 324-330.
19. **de Barros, J. Acacio** (2005). Utilizando métodos de Engajamento Interativo em um Curso de Mecânica Clássica (in Portuguese: Using Interactive Engagement Methods in a Advanced Classical Mechanics Course). *Anais do XVI Simpósio Nacional de Ensino de Física, Niterói, RJ*. (editor reviewed)
20. **Carvalhaes, C. G., de Barros, J. Acacio,** & Suppes, P. (2004). O Laplaciano na Análise de Ondas Cerebrais (in Portuguese; The Laplacian as a Tool for the Analysis of Brainwaves). *Anais do 60 Simpósio Brasileiro de Análise, 2*, 243-250.
21. **de Barros, J. Acacio, Remold, J.,** Vidal*, F. V., & Barbosa*, N. A. (2004). Desempenho Conceitual de Alunos do Método de Engajamento Interativo do Curso de Física I da UFJF (in Portuguese: Conceptual Development of Students in an Active Engagement Introductory Physics Course at UFJF). *Anais do IX Encontro de Pesquisa em Ensino de Física, Jaboticatubas, MG,*

Brazil.

22. **de Barros**, **J. Acacio,** Remold, J., da Silva*, G.S.F., & Tagliati, J.R. (2004). Engajamento interativo no curso de Física I da UFJF (in Portuguese; Interactive Engagement in UFJF's Introductory Physics course), *Revista Brasileira de Ensino de Física,* 26, 63–69.
23. **de Barros, J. Acacio, Remold, J.,** Tagliati, J. R., da Silva, G. S. F., & Matheus-Valle, J. L. (2003). A Aplicação de uma Nova Metodologia de Ensino de Física Usando Aprendizado Colaborativo (in Portuguese; Applying a New Physics-teaching Methodology Using Collaborative Learning). *Coletânea da VI Escola de Verão para Professores de Prática de Ensino de Biologia, Física e Química e Áreas Afins*. Niterói, RJ, Brazil: Editora da UFF.
24. **de Barros, J. Acacio, & Suppes, P.** (2001). Probabilistic Results for Six Detectors in a Three-Particle GHZ Experiment. In Bricmont, J., Ghirardi, G, Dürr, D., Petruccione, F, Galavotti, M.C., and Zanghi (Eds.), *Chance in Physics: Foundations and Perspectives*: *Lecture Notes in Physics Vol. 574,* 213-223. Berlin: Springer Verlag.
25. **de Barros, J. Acacio,** & Suppes, P. (2000). Dealing with detector inefficiencies in Greenberger-Horne-Zeilinger-type experiments. *Physical Review Letters* 84, 793–797.
26. **de Barros**, **J. Acacio,** Sagioro Leal, M.A., & **Pinto Neto, N.** (2000). The Causal Interpretation of the Conformally Coupled Scalar Field Quantum Cosmology. *General Relativity and Gravitation,* 32, 15–39.
27. de Barros, J. Acacio, **Shapiro, I.L.**, & **Pinto-Neto, N**. (1999). Quantum gravity correction, evolution of scalar field and inflation. *Classical and Quantum Gravity 16*, 1773–1782.
28. **de Barros**, **J. Acacio, Pinto-Neto, N.,** & Sagioro-Leal, M.A. (1998). The Causal Interpretation of Dust and Radiation Fluids Non-Singular Quantum Cosmologies. *Physics Letters A, 241*, 229–239.
29. **de Barros**, **J. Acacio,** & **Pinto-Neto, N.** (1998). The Causal Interpretation of Quantum Mechanics and the Singularity Problem and Time Issue in Quantum Cosmology. *International Journal of Modern Physics D, 7*, 201–214.
30. de Barros, J. Acacio, & **Shapiro, I.L.** (1997). Renormalization Group Study of the Higher Derivative Conformal Scalar Model. *Physics Letters B, 412*, 242–252.
31. **de Barros, J. Acacio,** & **Pinto Neto, N.** (1997). Comments on the Quantum Potential Approach to a Class of Quantum Cosmological Models. *Classical and Quantum Gravity, 14*, 1993–1995.
32. **de Barros**, **J. Acacio,** & **Pinto-Neto, N.** (1997). The Causal Interpretation of Quantum Mechanics and the Singularity Problem in Quantum Cosmology. *Nuclear Physics B, 57*, 247–250.
33. **Suppes, P.**, & de Barros, J. Acacio (1996)**.** Photons, Billiards and Chaos. In P. Weingartner & G. Schurz (Eds.), *Law and Prediction in the Light of Chaos Research: Lecture Notes in Physics Vol. 473,* 189–201. Berlin: Springer Verlag.
34. **Suppes, P., de Barros, J. Acacio, & Oas, G.** (1996). A Collection of Probabilistic Hidden-Variable Theorems and Counterexamples. In R. Pratesi & L. Ronchi (Eds.), *Waves, Information and Foundation of Physics: a tribute to Giuliano Toraldo di Francia on his 80th birthday*. Florence: Italian Physical Society.

35. **Suppes, P., de Barros, J. Acacio,** & Sant'Anna, A.S. (1996). Violation of Bell's Inequalities with Local Photons. *Foundations of Physics Letters, 9*, 551–560.
36. **Suppes, P. , Sant'Anna, A.S.,** de Barros, J. Acacio (1996). A Pure Particle Theory of the Casimir Effect. *Foundations of Physics Letter*, *9*, 213–223.
37. **Ravaglia, R.,** de Barros, J. Acacio, & Suppes, P. (1995). Computer-Based Advanced Placement for Physics for Gifted Students. *Computers in Physics, 9*, 380–386.
38. **Suppes, P. & de Barros, J. Acacio** (1994). Diffraction with Well-Defined Photon Trajectories: a Foundational Analysis. *Foundations of Physics Letters, 7*, 501–514.
39. **da Costa, N.C.A., Doria,** F.A., Furtado do Amaral, A. F., & J. Acacio de Barros. (1994). Two Questions on the Geometry of Gauge Fields. *Foundations of Physics, 24*, 783–800.
40. **Suppes, P., & de Barros, J. Acacio** (1994). A Random-Walk Approach to Interference. *International Journal of Theoretical Physics, 33*, 179–189.
41. **da Costa, N.C.A., Doria, F.A.,** & de Barros, J. Acacio (1990). A Suppes Predicate for General Relativity and Set-Theoretically Generic Spacetimes, *International Journal of Theoretical Physics, 29*, 935–961.
42. **Doria, F.A., de Barros, J. Acacio,** & Ribeiro da Silva, M. (1987). Noncomputable Functions, Generic Functions and Random Sequences. *Boletim da Sociedade Paranaense de Matemática, 8*, 197–216.

OTHER PUBLICATIONS

43. **de Barros, J. Acacio**, & Oas, G. (2015). Quantum Cognition and Negative Probabilities. In eds. E. Haven and A. Khrennikov, *The Palgrave Handbook of quantum models in social science: applications and grand challenges*. Palgrave MacMillan. In press.
44. **de Barros, J. Acacio**, & Oas, G. (2015). Some examples of contextuality in Physics and their implications to quantum cognition. In eds. E. Dzhafarov, R. Zhang, and S. M. Jordan, *Contextuality, from Quantum Physics to Psychology*. World Scientific.
45. **Oas, G.** & de Barros, J. Acacio (2015). Examining quantum mechanical fundamental principles with negative probabilities. In eds. E. Dzhafarov, R. Zhang, and S. M. Jordan, *Contextuality, from Quantum Physics to Psychology*. World Scientific.
46. **de Barros, J. Acacio**, Oas, G., & Suppes, P. (2015). Negative probabilities and Counterfactual Reasoning on the double-slit Experiment. To appear in *Conceptual Clarification: Tributes to Patrick Suppes (1922-2014)*, J.-Y-Beziau, D. Krause and J.B. Arenhart (eds), College Publications, London.
47. **de Barros**, **J. Acacio** (2015). On a Model of Quantum Mechanics and the Mind. *Foundations of Mind,* Sean O'Nuallain (ed.), Cambridge Scholars Publishing, in Press.
48. **de Barros, J. Acacio** & Oas, G. (2014) Response Selection Using Neural Phase Oscillators. *Foundations and Methods from Mathematics to Neuroscience: Essays Inspired by Patrick Suppes,* Colleen Crangle, Adolfo Garcia de la Sienra, and Helen Longino (eds), CSLI Publications, Stanford University, Stanford, CA.

49. **de Barros, J. Acacio** (2015). Beyond the Quantum Formalism: Consequences of a Neural-Oscillator Model to Quantum Cognition. In *Advances in Cognitive Neurodynamics (IV)*, H. Liljenström (ed.), pp. 401–404. Netherlands: Springer.
50. **de Barros**, **J. Acacio** (2012). Joint Probabilities and Quantum-Cognition. AIP Conference Proceedings, 1508, 98-109.
51. **de Barros**, **J. Acacio,** Oliveira Neto, G., & Vale, T.B. (2004). The de Broglie-Bohm Interpretation of Evaporating Black-Holes. Unpublished manuscript. arXiv:gr-qc/0404073.
52. **de Barros, J. Acacio** (1997). Causalidade e Probabilidade (in Portuguese: Causality and Probability). In *Pós-Modernismo: Anticiência e Antihumanismo?,* H. Abdalla-Neto (Ed.), Symposium conducted at the Universidade Católica de Petrópolis, Petrópolis, RJ, Brazil.
53. **Suppes, P., de Barros, J. A., & Sant'Anna, A. S.** (1996). A Proposed Experiment Showing that Classical Fields Can Violate Bell's Inequalities. arXiv:quant-ph/9606019.
54. Suppes, P., & **de Barros**, **J. Acacio** (1995, December 17) A Descoberta dos Raios-X (in Portuguese: The Discovery of the X-Rays). *Jornal Tribuna de Minas: Caderno Leitura*, Juiz de Fora, MG, Brazil.
55. **de Barros, J. Acacio** (1991). *Dois Exemplos de Indecibilidade e Incompletude em Física (Two Examples of Undecidability and Incompleteness in Physics)*. Doctoral dissertation, Brazilian Center for Research in Physics, Rio de Janeiro, Brazil. Dissertation committee: F. A. Doria (chair), N. C. A. da Costa, J. J. Giambiagi, A. F. F. Teixeira, D. Krause, W. C. S. da Silva, J. Helayel-Neto, F. Caruso.
56. **Doria, F. A.,** Furtado do Amaral, A. F., & de Barros, J. Acacio (1990). Noncurvature Solutions for the Bianchi Differential Conditions. CETMAC-5/ IDEA, School of Communications, UFRJ, Rio de Janeiro.
57. **da Costa, N. C. A., Doria, F. A., & de Barros, J. Acacio** (1989). On a Formally Undecidable Statement in Classical Electromagnetic Theory. In C. A. Bertulani and J. Lopes Neto (Eds,), *Encontro de Física Teórica do Rio de Janeiro: Homenagem Póstuma ao Prof. Carlos Márcio do Amaral*. Rio de Janeiro: Editora da UFRJ.
58. **de Barros, J.** Acacio (1988). *Conjuntos Genéricos Segundo Cohen e suas Aplicações à Física (Generic Sets According to Cohen and its Applications to Physics)*. Master's Thesis, Brazilian Center for Research in Physics, Rio de Janeiro, Brazil. Committee: F. A. Doria, N. C. A. da Costa, M. Dutra Fragoso, A. F. F. Teixeira.
59. **Doria, F.A., &** de Barros, J. Acacio (1988). Chaos, Entropy, Set-Theoretic Models and Higher Cardinals. In *Atas do Simpósio UNICAMP "Ordem e Desordem*." Unicamp: Editora da Unicamp.
60. **Doria, F. A.,** & de Barros, J. Acacio (1988). On a Set-Theoretic Property Equivalent to the Negation of the Continuum Hypothesis. CETMAC/IDEA, School of Communications, UFRJ, Rio de Janeiro.

INVITED PRESENTATIONS

1. Remembering Patrick Suppes. Invited presentation at the special Symposium in memoriam Patrick Suppes. European Mathematical Psychology Group

Meeting 2015 (EMPG 2015), to be held at the University of Padua, Italy, from Tuesday, September 01, 2015 until Thursday, September 03, 2015.

2. Foundations of Quantum Mechanics. Invited lectures at the *Fundamental Physics School*, organized with the support of FAPESP. State University of São Paulo in São José dos Campos, November 18th-21st, 2014.
3. Some Examples of Contextuality in Physics. Invited lecture at *Purdue Winer Memorial Lectures*, Purdue University, West Lafayette, IN, November 1st to 3rd.
4. Decision Making for Inconsistent Expert Judgments Using Signed Probabilities. Invited talk at the Mathematical and Computational Cognitive Science (MCCS) area colloquium of the Department of Psychological Sciences, Purdue University, West Lafayette, IN, February 24th, 2014.
5. Signed probabilities as an alternative to rational decision making: an argument from evolutionary biology. Keynote presentation at the conference "Convergenze Parallele" organized with the support of the Apulian Regional Initiative "Laboratori dal Basso", University of Salento, Italy, September 10th-12th, 2013.
6. Beyond quantum cognition: consequences of a neural-oscillator model of quantum-like behavioral response. Invited presentation at the special section on Quantum Ontology: A New Direction in Modeling the Cognitive Domain at *The 4th International Conference on Cognitive Neurodynamics*, Agora for Biosystems, Sigtuna, Sweden, June 23rd–27th, 2013.
7. Quantum Cognition. Invited tutorial (four lectures) at the *4th World Congress and School on Universal Logic*, Rio de Janeiro, Brazil, March 29th–April 2nd, 2013.
8. Response Selection Using Neural Phase Oscillators. Invited presentation at *A Symposium on the Occasion of Patrick Suppes's 90th Birthday*, Stanford University, Stanford, California, August 2012.
9. Joint Probabilities and Quantum Cognition. Invited presentation at *Quantum Theory: Reconsiderations of Foundations – 6,* Linneaus University, Växjö, Sweden, June 2012.
10. Realism in Energy Transition Processes: an example from Bohmian Mechanics. Invited presentation given at *New Trends in the Foundations of Science*. Universidade Federal de Santa Catarina, Florianópolis, SC, Brazil, April 2002.
11. Causalidade e Probabilidade (Causality and Probability). Invited presentation at the conference *Pós-Modernismo: Anticiência e Antihumanismo?* (Post-modernism: anti-science and anti-humanism?) Universidade Católica de Petrópolis (UCP), Petrópolis, RJ, Brazil, 1997.
12. A New Kind of Dirac Equation. Invited presentation given at the *10th Annual ANPA West Meeting*. Stanford University, Stanford, California, February 1992.

CONFERENCE PRESENTATIONS

13. Measuring quantum contextuality. Paper presented at Quantum Interactions, Filzbach, Switzerland, July 14th to 18th, 2015.
14. Exploring non-signalling polytopes with negative probability. Paper presented at the *Quantum Theory: from problems to advances,* Linneaus University, Växjö, Sweden, June 2014.

15. Unifying two methods of measuring quantum contextuality. Paper presented at the *Quantum Theory: from problems to advances,* Linneaus University, Växjö, Sweden, June 2014.
16. Decision Making for Inconsistent Expert Judgments Using Negative Probabilities. Paper presented at the *Seventh International Quantum Interactions Conference (QI2013)*, University of Leicester, Leicester, England, July 2013.
17. Negative probabilities and counterfactual reasoning. Paper presented at the *Quantum Information & Quantum Foundations Workshop*, Linneaus University, Växjö, Sweden, June 2013.
18. Can negative probabilities be useful? Poster presented at the *AAPT Winter Conference,* Ontario, California, February 2012.
19. A Convenient Text: Utilizing An Inconvenient Truth in an Interdisciplinary Gateway Course at San Francisco State University. Panel session (with T. Augsburg, T. Chitewere, M. Luskey, and L. Hennessy) presented at the *Association for Integrative Studies (AIS) 30th annual conference*, Springfield, Il, October 2008.
20. Inquiry in Cultural Context: Interactive Engagement among Brazilian Students. Poster presented at the *AAPT Summer Conference*, Edmonton, Canada, July 2008.
21. Utilizando métodos de Engajamento Interativo em um Curso de Mecânica Clássica (Using Interactive Engagement Methods in an Advanced Classical Mechanics Course). Paper presented at the *XVI Simpósio Nacional de Ensino de Física,* Niterói, RJ, Brazil, June 2005.
22. Analysis of Bohmian Trajectories for a Quantized Black-Hole. Poster presented at the *XXV Encontro Nacional de Física de Partículas e Campos*. Caxambú, MG, Brazil, August 2004.
23. Estimating the Error in the Laplacian of a 64 channel EEG. Poster presented at the *XXVII Encontro Nacional de Física da Matéria Condençada*. Poços de Caldas, MG, Brazil. May 2004.
24. Search for an Ideal Filter to Identify Words in the Laplacian of a 64 Channel EEG. Poster presented at the *XXVII Encontro Nacional de Física da Matéria Condensada*. Poços de Caldas, MG, Brazil, May 2004.
25. Realism in Energy Transition Processes: an example from Bohmian Mechanics. Poster presented at the *XXIV Encontro Nacional de Física de Partículas e Campos,* Caxambú, MG, Brazil, October 2003.
26. Causal interpretation of spherically symmetric evaporating black holes. Poster presented at the *XXIV Encontro Nacional de Física de Partículas e Campos,* Caxambú, MG, Brazil, October 2003.
27. Identificação de palavras via Laplaciano de um EEG de 64 canais (Identifying Words via a 64 Channel EEG Laplacian). Poster presented at the *XXVI Encontro Nacional de Física da Matéria Condensada*. Caxambú, MG, Brazil, May 2003.
28. Usando Técnicas de Aprendizado Colaborativo com Alunos de Física, Química e Matemática" (Using Collaborative Learning Techniques with Students of Physics, Chemistry and Mathematics). Poster presented at the *IV Encontro Regional da Sociedade Brasileira de Física em Minas Gerais*, São João Del Rey, MG, Brazil, March 2003.

29. A Aplicação de uma Nova Metodologia de Ensino de Física Usando Aprendizado Colaborativo (Applying a New Physics-teaching Methodology Using Collaborative Learning). Presentation given at the *VI Escola de Verão para Professores de Prática de Ensino de Biologia, Física e Química*. Niterói, RJ, Brazil, May 2003.
30. Upper Probabilities in Quantum Mechanics. Poster presented at the *XIX Encontro Nacional de Física de Partículas e Campos*. Caxambú, MG, Brazil, August 1998.
31. Renormalization Group Study of the Conformal Limit of the Higher Derivative Dilaton. Poster presented at the *XIX Encontro Nacional de Física de Partículas e Campos*. Caxambú, MG, Brazil, August 1998.
32. The Causal Interpretation of Quantum Mechanics in Quantum Cosmology. Poster presented at the *XVIII Encontro Nacional de Física de Partículas e Campos*. Caxambú, MG, Brazil, October 1997.
33. A Collection of Probabilistic Hidden-Variable Theorems and Counterexamples. Poster presented at the *XVIII Encontro Nacional de Física de Partículas e Campos*. Caxambu, MG, October 1997.
34. Interpretação Causal de um Modelo Cosmológico Quântico com Campo Escalar Conformalmente Invariante (Causal Interpretation of a Quantum Cosmological Model with a Conformally Invariant Scalar Field). Poster presented at the *XVIII Encontro Nacional de Física de Partículas e Campos*. Caxambú, MG, Brazil, October 1997.
35. Violação de Desigualdades Quânticas com Campos Clássicos (Violation of Quantum Inequalities with Classical Fields). Poster presented at the *XVII Encontro Nacional de Física de Partículas e Campos*. Serra Negra, SP, Brazil, September 1996.
36. Aplicações da Interpretação de Bohm à Cosmologia Quântica (Applying Bohm's Interpretation to Quantum Cosmology). Poster presented at the *XVII Encontro Nacional de Física de Partículas e Campos*. Serra Negra, SP, September 1996.
37. Um Predicado de Suppes para a Relatividade Geral e Espaços-Tempos Genéricos (A Suppes Predicate for General Relativity and Generic Spacetimes). Poster presented at the *XI Encontro Nacional de Física de Partículas e Campos*. Caxambú, MG, Brazil, September 1990.

PUBLICATIONS SUBMITTED OR IN PREPARATION

THESES SUPERVISED

1. Tibério Borges Vale, "Intepretação Causal em Buracos Negros Quânticos" (The Causal Interpretation of Quantum Black Holes), Masters thesis, UFJF, 2003.
2. Tibério Borges Vale, "A Interpretação de Bohm na Gravitação Quântica" (Bohm's Interpretation in Quantum Cosmology), Honors thesis, UFJF, 2003.
3. Glauco S. F. da Silva, "Métodos de Engajamento Ativo em Física I" (Interactive Engagement Methods in Physics I), Honors thesis, UFJF, 2003.
4. Ana das Mercês Pelinson, "Ação Efetiva Induzida por Anomalias para Solução

Gravitacional Inflacionária" (Effective Action for an Anomaly Induced Gravitational and Inflationary Solution), Masters thesis, UFJF, 1999. (co-supervisor with I. Shapiro).

5. Marco Antônio Sagioro Leal, "Cosmologia Quântica e o Problema da Singularidade Inicial" (in Portuguese; Quantum Cosmology and the Singularity Problem), Masters thesis, UFJF 1998. (co-supervisor with N. Pinto-Neto)
6. Luis Antônio de Castro Henriques, "A Interpretação de Bohm da Mecânica Quântica" (in Portuguese; Bohm's Interpretation of Quantum Mechanics), Honors thesis, UFJF, 1996.

AWARDS, HONORS, AND GRANTS

1. Project: Effective Action in Quantum Gravity and Consequences to Cosmology, Minas Gerais Research Support Foundation (FAPEMIG) Research Grant, Co-PI, 2001-2003. Collaborators: Ilya Shapiro, Nelson Pinto Neto.
2. Project: Computational Limits to Constructs in Classical and Quantum Theories, Minas Gerais Research Support Foundation (FAPEMIG) Research Grant, PI, 1996-1997. Collaborators: Francisco Doria.
3. Project: Computational Limits (in Turing's sense) in Classical Theories, Special Program for Joint Research (PREVI/UFJF) Research Grant, PI, 1996. Collaborators: Francisco Doria.
4. Project: Ontological Interpretations of Quantum Mechanics and Applications to Quantum Cosmology, Special Program for Joint Research (PREVI/UFJF) Research Grant, PI, 1996. Collaborators: Nelson Pinto Neto.
5. Postdoctoral Fellowship at Stanford University, Brazilian Federal Higher Education Sponsoring Bureau (Capes), 1991-1993
6. Doctoral Scholarship at the Brazilian Center for Research in Physics, Brazilian National Science and Technology Council (CNPq), 1989-1991
7. Masters Scholarship at Brazilian Center for Research in Physics, Brazilian National Science and Technology Council (CNPq), 1988-1989
8. Scientific Initiation Undergraduate Scholarship, Brazilian National Science and Technology Council (CNPq), 1987-1988

UNIVERSITY, DEPARTMENT, AND COMMUNITY SERVICE

San Francisco State University

1. University Senate. Senator representing the CL&CA, 2015-Present.
2. University Senate CRAC Committee. Member, 2015-Present.
3. University Senate Fellowship Comittee. Member, 2015-Present.
4. Liberal Studies Student Organization. Faculty Adviser, 2008-2015.
5. University Senate Fellowship Committee. Chair, 2011-2015.
6. College of Liberal & Creative Arts Technology Committee. Member, 2012-2014.
7. University Senate Bachelors Requirement Subcommittee on GE Science, Member, 2011-2014.

8. Hearst/CSU Trustees Award selection committee. Ad hoc committee member, 2011.
9. Merage Foundation selection committee. Ad hoc committee member, 2011.
10. Liberal Studies Sneak Preview Committee. Chair, 2008-2009.
11. Center for Science and Math Education's Steering Committee. Member, 2008-2009.
12. Liberal Studies Teacher Preparation Committee. Member, 2008-2010.
13. Liberal Studies Curriculum Committee. Member, 2007-2010.
14. Senate's Liberal Studies Council. Member, 2007-2011.
15. Faculty Hearing Panel. Member, 2007-2011.

Federal University of Juiz de Fora

16. Juiz de Fora's "Educator Week", Municipal Department of Education of Juiz de Fora, Brazil, Workshop on Active Engagement in Physics. Workshop Facilitator, 2003-2004

17. Physics and Physics Teaching Undergraduate Programs. Program Coordinator, 2001-2003
18. University Senate (CU). Senator representing the Physics Programs. 2001-2003.
19. Teaching Assistantship Committee. Member, 2003.
20. University Undergraduate Admissions Committee. Member (Physics), 1997, 1998, 2003.
21. Faculty Misconduct Investigation Committee. Chair, 2003.
22. Student Disciplinary Committee. Member, 2003.
23. Physics Curriculum Committee. Chair, 2003-2003.
24. Keller Method Committee. Member, 2002.
25. Physics Department Vice-Head, 1998.
26. Juiz de Fora Physics Olympiads. Coordinator, 1997-1998.
27. Physics Week. Coordinator, 1998.
28. Search Committee (Lecturer). Member, 1998.
29. Masters Program UFJF/UFMG (joint). Coordinator and collegiate member, 1996-1997.
30. Physics Department Computer System and Infrastructure Committee. Member, 1995-1997.
31. Search Committee (Visiting Professors). Chair, 1995.

LANGUAGES

English (fluent)
Portuguese (fluent)
French & Spanish (basic reading and comprehension)

AFFILIATIONS

Brazilian Physical Society (SBF)
American Association of Physics Teachers (AAPT)
The Philosophy of Science Association (PSA)
Institute for Quantum Social and Cognitive Science (IQSCS)