

# Curriculum Vitae

## Felipe Tovar Falciano

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### Address

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### Education

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<i>Ph.D. in Physics</i>	Brazilian Center for Physics Research (RJ-Brazil) Title: “Non-Singular Scalar Field Universe Models ” Supervised by Dr. Nelson Pinto-Neto	2004 - 2008
<i>Ph.D. Sandwich</i>	IAP - Institut d'Astrophysique de Paris, Paris, France Supervised by Dr. Patrick Peter	2006 - 2007
<i>Master in Physics</i>	Brazilian Center for Physics Research (RJ-Brazil) Title: “Quantization of a FLRW Model with Two Fluids” Supervised by Dr. Nelson Pinto-Neto	2002- 2004
<i>Master in Philosophy</i>	Rio de Janeiro State University (RJ-Brazil) Title: “Cosmology: philosophical perspective of a historical science” Supervised by Dr. Antonio Augusto Passos Videira	2015 - 2017
<i>B.Sc. in Physics</i>	Pontifical Catholic University (RJ-Brazil)	1996 – 2001
<i>B.Ed. in Physics</i>	Pontifical Catholic University (RJ-Brazil)	1996 – 2001
<i>Undergraduate Sandwich</i>	University of Northern Colorado, Colorado, USA	1999 – 2000

### Professional Experience

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Brazilian Center for Physics Research, Rio de Janeiro, Brazil Associate Research Professor	2009 - Present
“Curso Invest” Community preparatory course for college entrance exams, Rio de Janeiro, Brazil. Volunteer Professor	2013 - 2015
Brazilian Center for Physics Research, Rio de Janeiro, Brazil. Postdoctoral researcher	2008 - 2009

### Teaching

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High School level: Topics lectured (8-16 hours per year) at “Curso Invest”  
Optics; Mechanics; Electrodynamics; Thermodynamics;

Undergraduate level: Topics lectured (10 hours per course) during summer/winter schools  
Special Relativity; Classical Fields Theory; Gravitation;

Graduate level: Full semester courses (64 hours per semester)  
General Relativity; Cosmology; Classical Fields Theory;

## ***Languages***

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Native speaker of ***Portuguese***.  
Proficient in ***English***.  
High intermediate level of ***French***.

## ***Awards***

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“ <i>Bolsa aluno nota 10</i> ”, FAPERJ - State Funding Agency (special master Fellowship for academic achievement)	2003 - 2004
“ <i>Outstanding International Student</i> ”, University of Northern Colorado	2000
<i>Academic Excellence</i> , Pontifical Catholic University (PUC-RJ)	1999
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<i>Academic Excellence</i> , Pontifical Catholic University (PUC-RJ)	1997

## ***Research grants and Fellowship***

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Scientific Achievement PQ-2- National Research Council (CNPq, Brazil)	2016 - present
Post-doc Fellowship - National Research Council (CNPq, Brazil)	2008 - 2009
Ph.D. Fellowship - National Research Council (CNPq, Brazil)	2004 - 2008
M.Sc. Fellowship - National Research Council (CNPq, Brazil)	2002 - 2003

## ***Academic Supervisions***

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*PhD advisor: 1 thesis (2016) and 2 in progress*

*MSc advisor: 5 theses (between 2011 and 2018)*

*Undergraduate Scientific Internship: 6 projects completed (between 2009 and 2017)*

## ***Research Highlights***

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I have 22 scientific papers published in international peer review journals (May 2018).

## ***Research interests***

Cosmological perturbation theory; non-singular cosmological models; quantum cosmology; inflationary models; classical and quantum gravity; foundation of quantum mechanics.

## ***Administrative Tasks***

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Member of the committee for Master and Ph.D. student selection at CBPF;

Member of the academic graduate program committee at CBPF;

Meeting Organizer: 5 international and 7 national scientific events/school.

*Master board of examiners: 16 participations*

*Ph.D. board of examiners: 9 participations*

*Ph.D. Qualifying board of examiners: 3 participations*

## ***Scientific Publications (22 Peer-reviewed papers)***

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### ***Bekenstein inequalities and nonlinear electrodynamics***

M. L. Peñafiel, F. T. Falciano / Published in Phys. Rev. D96 (2017), no.12, 1125011

### ***Cosmology from a gauge induced gravity***

F. T. Falciano, G. Sadovski, R. F. Sobreiro, A. A. Tomaz / Published in Gen. Relativ. Gravit. (2017) no 49, 118

### ***Discrepancy in parameter constraints for LTB models using BAO and SNIa***

C.Z. Vargas, F.T. Falciano, R.R.R. Reis / Published in Class. Quant. Grav. 34 (2017) no.2, 025002

### ***Wheeler-DeWitt quantization and singularities***

Felipe Tovar Falciano, Nelson Pinto-Neto, Ward Struyve / Published in Phys. Rev. D91 (2015) no.4, 043524

### ***Nonlocal Effects in Black Body Radiation***

G.N. Bremm, F.T. Falciano / Published in Annals Phys. 527 (2015) 265-277

### ***Covariant Bardeen Perturbation Formalism***

S.D.P. Vitenti, F.T. Falciano, N. Pinto-Neto / Published in Phys. Rev. D89 (2014) no.10, 103538

### ***Scalar Field Perturbations with Arbitrary Potentials in Quantum Backgrounds***

F.T. Falciano, Nelson Pinto-Neto, Sandro Dias Pinto Vitenti / Published in Phys. Rev. D87 (2013) no.10, 103514

### ***Disformal invariance of Maxwell's field equations***

E. Goulart, F.T. Falciano / Published in Class. Quant. Grav. 30 (2013) 155020

### ***Dilaton Quantum Cosmology with a Schrodinger-like equation***

J.C. Fabris, F.T. Falciano, J. Marto, N. Pinto-Neto, P. Vargas Moniz / Published in Braz. J. Phys. 42 (2012) 475

### ***Quantum Cosmological Perturbations of Generic Fluids in Quantum Universes***

S.D.P. Vitenti, F.T. Falciano, N. Pinto-Neto / Published in Phys. Rev. D87 (2013) no.10, 103503

### ***The Wheeler-DeWitt Quantization Can Solve the Singularity Problem***

N. Pinto-Neto, F.T. Falciano, Roberto Pereira, E.Sergio Santini / Published in Phys. Rev. D86 (2012) 063504

### ***A new symmetry of the relativistic wave equation***

F.T. Falciano, E. Goulart / Published in Class. Quant. Grav. 29 (2012) 085011

### ***Hidden geometries in nonlinear theories: A Novel aspect of analogue gravity***

E. Goulart, M. Novello, F.T. Falciano, J.D. Toniato / Published in Class. Quant. Grav. 28 (2011) 245008

### ***Brane world in Non-Riemannian Geometry***

Rodrigo Maier, Felipe Tovar Falciano / Published in Phys. Rev. D83 (2011) 064019

### ***Geometrical properties of electromagnetic tidal forces***

Erico Goulart, Felipe Tovar Falciano / Published in Int. J. Mod. Phys. A25 (2010) 5383-5398

### ***Geometrizing relativistic quantum mechanics***

F.T. Falciano, M. Novello, J.M. Salim / Published in Found. Phys. 40 (2010) 1885-1901

### ***On a Geometrical Description of Quantum Mechanics***

M. Novello, J.M. Salim, F.T. Falciano / Published in Int. J. Geom. Meth. Mod. Phys. 8 (2011) 87-98

### ***Scalar Perturbations in Scalar Field Quantum Cosmology***

F.T. Falciano, N. Pinto-Neto / Published in Phys. Rev. D79 (2009) 023507

***Formal analogies between gravitation and electrodynamics***

E. Goulart, F.T. Falciano / Published in Int. J. Mod. Phys. A24 (2009) 4589-4605

***A Classical bounce: Constraints and consequences***

Felipe T. Falciano, Marc Lilley, Patrick Peter / Published in Phys. Rev. D77 (2008) 083513

***An Inflationary Non-singular Quantum Cosmological Model***

Felipe T. Falciano, Nelson Pinto-Neto, E.Sergio Santini / Published in Phys. Rev. D76 (2007) 083521

***Quantization of Friedmann cosmological models with two fluids: Dust plus radiation***

N. Pinto-Neto, E.Sergio Santini, F.T. Falciano / Published in Phys. Lett. A344 (2005) 131-143

***Outreach Publications and Media***

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***Mistérios do Universo: matéria e energia escuras intrigam cientistas***

Newspaper article, Folha de São Paulo, section Ilustríssima (March 4<sup>th</sup>, 2018)

TV Show, TV Brasil, Comentário Geral, *Fim* (February 2012).

***Geometria, espaço-tempo e gravitação: conexão entre conceitos da relatividade geral***

F. .T. Falciano / Published in Revista Brasileira de Ensino de Física, v. 31 (2009), p. 4308-1.

***Cinematia relativística: paradoxo dos gêmeos***

F. .T. Falciano / Published in Revista Brasileira de Ensino de Física, v. 29 (2007), p. 19.