

Novello Mario

Position: Professor

Period covered: 2003-present



Scientific Work

1. Theoretical Cosmology with emphasis in Bouncing cosmological models
2. Nonlinear field theory in flat and curved spacetime - effective geometry
3. Spinor theory of gravity
4. Books on popularization of science:
 - a) O que e Cosmologia (2008) Editor; Jorge Zahar (in portuguese)
 - b) Sobre o universo de Godel (2007) Editor; Jorge Zahar (in portuguese)
 - c) Do Big-bang ao Universo Eterno (to appear in 2010) Editor; Jorge Zahar (in portuguese)
5. Scientific articles

Recent articles (2008-2009):

- a) Bouncing Cosmology (with SEP Bergliaffa) Physics Report (2008)
- b) Cyclic Magnetic Universe. (M. Novello, Aline N. Araujo and J M Salim) in International Journal of Modern Physics A (2009).
- c) Gravitational waves on singular and bouncing FRW universes (with V. Antunes and E. Goulart) in Gravitation and Cosmology (2009) v 15, 191.
- d) Gaussian coordinate system for Kerr metric (with E,H,S, Bittencourt) 2009
- e) Spin-2 field theory in terms of Cartan geometry (with P.I.Trajtenberg) to appear as a chapter in a book (2009)
- f) Cosmology; a book to be published in 2010 by Brazilian Institute of Physics (in portuguese)
- g) Non linear Electrodynamics (causal properties and cosmological effects) – with E. Goulart: a book to be published in 2010 by Brazilian Institute of Physics (in portuguese)
- h) Constructing Dirac linear fermions in terms of non-linear Heisenberg spinors. Europhysics Letters EPL, 80 (2007) 41001 e-Print: arXiv:0705.2692 [astro-ph]

i) A Spinor theory of gravity and the cosmological framework.
JCAP 706:018,2007.

j) The Nature of Lambda and the mass of the graviton: A Critical view (with J P Gazeau).
Journal of Physics A 41 (2008) 304008 (e-Print: gr-qc/0610054)

k) Cosmological Effects of Nonlinear Electrodynamics. Published in
Class.Quant.Grav.24:3021-3036,2007.

l) Nonlinear electrodynamics and the Pioneer 10/11 spacecraft anomaly. Published in
Europhys.Lett.77:19001,2007.

m) A toy model of a fake inflation. (with E Huguet and J, Queva) Published in
Phys.Rev.D73:123531,2006.

Conferences and educational activities

Conferences and Other External Scientific Work

July (2009) Escola Brasileira de Cosmologia (Rio de Janeiro)

May (2009) Sobral Meeting (Fortaleza – Ceará)

July (2009) XII Marcel Grossman Meeting (Paris)

Diploma thesis supervision

Erico Goulart

Maria Borba

Aline N. Araújo

Josephine Rua

Vicente Antunes

R P Neves

Work With Postdocs

Santiago E.P. Bergliaffa

Herman Mosquera Cuesta

Leo Medeiros

Works

Cosmology: Theory and Observations - Bouncing cosmological models

Nonlinear field theory in flat and curved spacetime - effective geometry

Spinor Theory of Gravity

Other

Received the title of Docteur Honoris Causa from University of Lyon (France)

Speech by Professor E. Elbaz for the acknowledgement of the title of “Docteur Honoris Causa” of the University Claude Bernard to Mario Novello (March 2004)

After this presentation I read the first chapter of my book “O que é Cosmologia?” Ed. Jorge Zahar, Rio de Janeiro, 2006

2009 List of Publications

Articles in 2008-2009

NOVELLO, M. ; BERGLIAFFA, S. E. P. . Bouncing Cosmologies. Physics Reports, v. 463, p. 127-213, 2008.

NOVELLO, M. ; Novello, M . The question of mass in (anti-) de Sitter spacetimes. Journal of Physics. A, Mathematical and Theoretical, v. 41, p. 304008, 2008.

GAZEAU, J. ; NOVELLO, M. . The Nature of Lambda and the mass of the graviton. Journal of Physics. A, Mathematical and General, 2008.

NOVELLO, M. ; BERGLIAFFA, S. E. P. . Bouncing Cosmology. Physics Reports, 2008.

NOVELLO, M.. Participação em banca de Cristina Furnaleto. Implicações cosmológicas de um campo escalar com ação de Born-Infeld estendida. 2008. Dissertação (Mestrado em Física) - Centro Brasileiro de Pesquisas Físicas.

Aline Nogueira de Araujo. Propriedades dos Universos Cíclicos. Início: 2008. Tese (Doutorado em Física) - Centro Brasileiro de Pesquisas Físicas, Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. (Orientador).

Vicente Antunes. Universos com bouncing (ricochete). Início: 2008. Tese (Doutorado em Doutorado em Física-CBPF) - Centro Brasileiro de Pesquisas Físicas. (Orientador).

ALINE NOGUEIRA DE ARAUJO. UNIVERSO MAGNÉTICO CÍCLICO. 2008. Dissertação (Mestrado em Física) - Centro Brasileiro de Pesquisas Físicas, . Orientador: Mario Novello.

ERICO GOULART DE OLIVEIRA COSTA. EXCITAÇÕES DO TENSOR DE WEYL NA COSMOLOGIA E QUESTÕES DE ESTABILIDADE. 2008. Tese (Doutorado em Física) - Centro Brasileiro de Pesquisas Físicas, . Orientador: Mario Novello.