

Table of Contents

Page No.

Foreword	v
Preface	viii
Acknowledgments	xi

Part I – Physics

Jonas R. Becker Arenhart and Helcio Felippe Junior

1 The Fate of Bundle and Substratum Theories Under KS Theorem	1
---	---

J. Acacio de Barros and Adonai Sant'Anna

2 Classical Fields, Bell's Inequalities, and the Quantum Limit	23
--	----

Christian de Ronde and César Massri

3 Against 'Particles' and 'Collapses' in Quantum Entanglement	38
---	----

Luis Carlos Garcia de Andrade

4 Generation of Cosmological Magnetic Fields at Laboratory Scales in a Chiral QED Metric-Torsion Gravitational Weak Field Background	68
--	----

Décio Krause

5 Quantum Mechanics, Ontology, and Non-Reflexive Logic	75
--	----

Part II – Logic and the Foundations of Mathematics

Felipe S. Abrahão, Klaus Wehmuth, and Artur Ziviani

6 On the existence of hidden machines in computational time hierarchies	113
---	-----

Jean-Yves Beziau

7 What is an Axiom?	122
-------------------------------	-----

Itala M. Loffredo D'Ottaviano and Hércules de Araujo Feitosa

8 Galois Pairs with the Modal Operators of Paraconsistent Logic J_3 . .	143
---	-----

<i>Newton C. A. da Costa</i>	
9 Undecidability, Incompleteness and Beyond: an adventure	168
<i>Marcelo Finger</i>	
10 Logic in Times of Big Data	184
<i>Adonai S. Sant'Anna</i>	
11 Epistemology of Quasi-Sets	199
<i>Bruno Scarpellini</i>	
12 Recursively Enumerable Sets and Fourier Series	217
<i>Apostolos Syropoulos</i>	
13 Categories of Fuzzy Structures and Fuzzy Categories	230

Part III – Philosophy

<i>Otavio Bueno</i>	
14 The Philosophical Significance of Incompleteness	250
<i>Gregory Chaitin</i>	
15 Consciousness and Information, classical, quantum or algorithmic? .	260
<i>J. Acacio de Barros and Carlos Montemayor</i>	
16 Information and the Hard Problem of Consciousness	270
<i>Marcelo Gleiser</i>	
17 What We Can't Know of the World: Science and the Limits of Knowledge	282
<i>Muniz Sodré</i>	
18 A Question of Identity	300

Part IV – Social Sciences

<i>Sami Al-Suwailem</i>	
19 Gödelian Rationality	310

Francisco Caruso and Roberto Moreira Xavier

- 20 In what sense space dimensionality can be used to cast light into
cultural anthropology? 344

*Julio Michael Stern, Marcos Antonio Simplicio, Marcos Vinicius M. Silva,
and Roberto A. Castellanos Pfeiffer*

- 21 Randomization and Fair Judgment in Law and Science 379