INDEX

Index i

Introduction 1

Chapter 1 Successes of a Novel Gravity Interpretation 7

The great Michelson & Morley, Lorentz and Einstein trap 9

1. The Michelson & Morley experiment, the Lorentz and the Einstein interpretation. 9
2. A null result means : a null result. 10
3. Conclusion. 11
4. References and interesting literature. 12

A coherent dual vector field theory for gravitation 13

1. Introduction : the Maxwell analogy for gravitation: a short history. 14
2. Law of gravitational motion transfer. 14
3. Gyrotation of a moving mass in an external gravitational field. 15
4. Gyrotation of rotating bodies in a gravitational field. 16
5. Angular collapse into prograde orbits. Precession of orbital spinning objects. 16
6. Structure and formation of prograde disc Galaxies. 18
7. Unlimited maximum spin velocity of compact stars. 20
8. Origin of the shape of mass losses in supernovae. 21
9. Dynamo motion of the sun. 22
10. Binary stars with accretion disc. 22
11. Repulsion by moving masses. 24
12. Chaos explained by gyrotation. 24
13. The link between Relativity Theory and Gyrotation Theory. 25
14. Discussion : implications of the relationship between Relativity and Gyrotation 26
15. Conclusion 26
16. References 26

Lectures on "A coherent dual vector field theory for gravitation". 27

Lecture A: a word on the Maxwell analogy 27
Lecture B: a word on the flux theory approach 27
Lecture C: a word on the application of the Stokes theorem and on loop integrals 28
Lecture D: a word on the planetary systems 29
Lecture E : a word on the formation of disk galaxies 31

Discussion: the Dual Gravitation Field versus the Relativity Theory 33

What is the extend of the Dual Gravitation Field Theory (Gravitomagnetism)? 33
The centenary of the relativity theory. 33
Lorentz's transformation, Michelson-Morley's experience, and Einstein's relativity theory. 34
Discussion of the experience of Michelson-Morley 34
Galaxies with a spinning center. 35
Worlds 35
Experiment on 'local absolute speed' 35
Is the relativity theory wrong? 36
Is the relativity theory compatible with the gravitomagnetism theory? 36
Inertial mass and gravitational mass 36
Conclusions. 37
References. 37

Chapter 2 Saturn and its Dynamic Rings 38

Why does Saturn have many tiny rings ? 39

1. Introduction / *The Maxwell Analogy for gravitation / Law of gravitational motion transfer – Equations / Gyrotation of rotating bodies in a gravitational field.* 40

2. Saturn's rings. */ Basic data / Formation of rings / Formation of gaps between the rings / Ring F : rotating gasses* 41
3. Conclusion 45
4. References 45

On the dynamics of Saturn's spirally wound F-ring edge. 46

1. The Maxwell Analogy for gravitation: equations and symbols. 46
2. The F-ring. 47
3. Discussion and conclusion. 52
4. References and interesting literature. 52

Chapter 3 The Ultimate Probation Tests for Gyrotation 53

Did Einstein cheat ? 54

1. Introduction: two competitive models. 55
2. The Maxwell Analogy for Gravitation: a short overview. 57
3. The Maxwell Analogy for Gravitation examined by Oleg Jefimenko. 57
4. The Maxwell analogy for gravitation examined by James A. Green. 59
5. General Relativity Theory: a dubious calibration? 60
6. Comparison with the Maxwell Analogy. 61
7. Has the Relativity Theory era been fertile so far? 64
8. Conclusion: Did Einstein cheat ? 65
9. References and interesting literature. 66

On the Origin of the Lifetime Dilatation of High Velocity Mesons 67

1. Pro memore : The Heaviside (Maxwell) Analogy for gravitation (or gravitomagnetism). 67
2. Gravitomagnetic induction. 68
3. Discussion and conclusion: does relativistic mass exist? 70
4. References and interesting literature. 71

Chapter 4 The Behavior of Rotating Stars and Black Holes 72

On the geometry of rotary stars and black holes 73

1. Introduction : the Maxwell analogy for gravitation, summarized. 74
2. Gyrotation of spherical rotating bodies in a gravitational field. 74
3. Explosion-free zones and general shape of fast spinning stars. 75
4. General remnants' shape of exploded fast spinning stars. 79
5. Conclusions. 80
6. References. 81

On the orbital velocities nearby rotary stars and black holes 82

1. Introduction : the Maxwell analogy for gravitation. 83
2. Gyrotation of spherical rotating bodies in a gravitational field. 83
3. Orbital velocity nearby fast spinning stars. 83
4. Conclusion. 86
5. References. 86

Mass- and light-horizons, black holes' radii, the Schwartzschild metric and the Kerr metric 87

1. The orbital velocities nearby Rotary Stars and Black Holes. 88
2. The bending of light into a circular orbit. 91
3. Deriving the radius of Pure Black Holes. 93
4. Discussion: Three approaches, three important results. 95
5. Conclusion. 97
6. References. 98

How Really Massive are the Super-Massive Rotating Black Holes in the Milky Way's Bulge? 99

1. Basic gyro-gravitation physics for a rotating sphere. 99

2. Gyrotational centripetal forces. 101
3. Study of the case $v_k\, s_\Omega >> 1$. 103
4. Discussion and conclusion. 105
5. References. 106
Appendix : Critical radius of a spinning star. 106

Chapter 5 How Stars in and outside Galaxies behave 108

Deduction of orbital velocities in disk galaxies, or: "Dark Matter": a myth? 109

1. Pro Memore : Symbols, basic equations and philosophy. 110
2. Why do some scientists claim the existence of "dark matter"? 111
3. Pro Memore : Main dynamics of orbital systems. 113
4. From a spheric galaxy to a disk galaxy with constant stars' velocity. 114
5. Origin of the variations in the stars' velocities. 116
6. Conclusion : are large amounts of "dark matter" necessary to describe disk galaxies ? 122
7. References and interesting lecture. 122

Introduction to the Flyby Anomaly : the Gyrotational Acceleration of Orbiting Satellites 123

1. The Maxwell Analogy for gravitation: equations and symbols. 123
2. Calculation of the gyrotation of a spinning sphere. 124
3. The gyrotational accelerations of the satellite 125
4. Axial transform: rotation about the Y-axis 125
5. Conclusions. 126
6. References and bibliography. 126

Swivelling time of spherical galaxies towards disk galaxies 127

1. From a spherical to a disk galaxy. 127
2. The swivelling time from a spherical galaxy to a disk galaxy. 128
3. Discussion. 129
4. Conclusion. 129
5. References and interesting lecture. 129

Gravitomagnetic Evolutionary Classification of Galaxies 130

1. The galaxy evolution from a spherical to a spirally disc galaxy. 130
2. When the global spin of the bulge flips : from a spirally to a turbulent bar galaxy. 133
4. Introduction of a new evolutionary classification scheme for galaxies. 135
5. Conclusions. 135
6. References. 136

Chapter 6 On Dancing and Beating Asteroids 137

The Gyro-Gravitational Spin Vector Torque Dynamics of Main Belt Asteroids in relationship with their Tilt and their Orbital Inclination. 138

1. Orbital data of the main belt asteroids, by E. Skoglöv and A. Erikson. 138
2. The observed spin vector distribution, by A. Erikson. 142
3. The Maxwell Analogy for gravitation: equations and symbols. 143
4. Conditions for a maximal and minimal gyrotation on the asteroid's orbital inclination. 147
5. Discussion and conclusions. 149
6. References and bibliography. 150
Appendix A : Stability study of the asteroids. 151
Appendix B : Calculation of the precession and the nutation. 152
Appendix C : Detailed calculation of the relevant torques. 153

Cyclic Tilt Spin Vector Variations of Main Belt Asteroids due to the Solar Gyro-Gravitation. 155

1. Introduction. 155
2. The tilt change and its interpretation. 156
3. Discussion and conclusions. 164

4. References and bibliography. 164

Chapter 7 Interpreting the Cosmic Redshifts from Quasars 165

Quasar's Gyro-gravity Behavior, Luminosity and Redshift. 166

1. Pro Memore : Maxwell Analogy equations in short, symbols and basic equations. 166
2. Rotation of galaxies and quasars. 167
3. The gamma-ray production of quasars. 169
4. Comparative gyro-gravitational redshift of the galaxy and the quasar. 170
5. Discussion and conclusions. 171
6. References

Towards an Absolute Cosmic Distance Gauge by using Redshift Spectra from Light Fatigue. 173

1. Pro Memore : The Maxwell Analogy for gravitation: equations and symbols. 174
2. The mechanics and dynamics of light 174
3. The dynamics of the dark energy in the presence of light 175
4. Discussion and conclusion. 178
5. References. 179

Chapter 8 Coriolis Gravity Theory 180

Is the Differential Rotation of the Sun Caused by a Coriolis Graviton Engine? 181

1. Introduction 181
2. Gravity as a Coriolis effect 181
3. Inertia as a Coriolis effect 182
4. Derivation of the Sun’s Rotation Equation 182
5. Derivation of the Sun’s Differential Rotation Equation 183
6. Discussion 183
7. Conclusion 183
8. References 183

The Expanding Earth : Is the Inflation of Heavenly Bodies Caused by Reoriented Particles under Gyrotation Fields? 184

1. The expanding earth theory 184
2. The internal gyrotation field of a rotating body 184
3. The preferential orientation of particles under a gyrotation field 185
4. Gravity between particles as a Coriolis effect 185
5. Gravitational consequences of the preferentially like-oriented particles 185
6. Discussion 186
7. Conclusion 186

References 186

On the Gravitational Constant of Our Inflating Sun and On the Origin of the Stars’ Lifecycle 187

1. Introduction: the expanding Sun and Earth 187
2 The value of the gravitational constant is defined by the quantity of like spin orientations of particles 188
3 The star’s lifecycle: a typical gravitomagnetic cycle 188
4 Discussion and conclusion 189

References

The Expanding Earth : The Inflation of Heavenly Bodies Issues Demands a Compression-Free Inner Core 191

1. The inflation of heavenly bodies is caused by reoriented particles under gyrotation fields 191
2. The Earth structure with a compression-free core 192
3. The mainstream Earth structure model 192
4. Discussion and conclusion: is a compressed inner core inevitable? 194

References 194

Fundamental Causes of an Attractive Gravitational Constant, Varying in Place and Time 195

1. The Coriolis Gravitation Theory 195
2. Integration of Gravitomagnetism with the Coriolis Gravitation Theory 195
3. The internal gyrotation field of a rotating body 196
4. Conclusions 197
References 197