## Contents

| For  | Foreword   |    |  |
|------|--|----|--|
| 1.   | Introduction   | 2  |  |
| 2.   | The proper time density  | 3  |  |
| 3.   | The gravitational potential from the proper time density                         | 5  |  |
| 4.   | The Lagrangian of a mass $m$ in a gravitational potential from a point like mass |    |  |
|      | $\mathbf{M}$   | 6  |  |
| 5.   | The Hamiltonian of a mass in a gravitational potential                           | 7  |  |
| 6.   | The Hamiltonian for the orbit in polar coordinates in a central gravitational    |    |  |
|      | potential  | 7  |  |
| 7.   | The perihelion precession of Mercury, its orbital period and the flyby anomaly   | 9  |  |
| 8.   | The Gravity B Probe  | 10 |  |
| 9.   | The B-potential  | 12 |  |
| 10.  | Auxiliary equations of gravitation   | 14 |  |
| 11.  | The four force from gravitation  | 17 |  |
| 12.  | A monopole radiation   | 20 |  |
| 13.  | The radiation from binary stars  | 21 |  |
| 13.1 | 1. Quasi multipole radiation from binary stars                                   | 21 |  |
| 13.2 | 2. B-potential radiation from binary stars                                       | 24 |  |
| 14.  | The Langrangian and the spin of the gravitational field                          | 26 |  |
| 15.  | The deflection of light by gravitation   | 28 |  |
| 16.  | A 'metric' for light in a gravitational potential                                | 30 |  |
| 17.  | The amended Shapiro effect   | 31 |  |
| 18.  | Is there a gravitational 'metric' for masses?                                    | 32 |  |
| On   | Quantum mechanics of gravitation   |    |  |



| Α     | NEW THEORY OF GRAVITATION AND ITS QUANTIZATION VERSION 1.1, 20.01.2013 | 3  |
|-------|--|----|
| 19.   | Gravitation and the electron   | 33 |
| 20.   | An anti-particle in a gravitational potential                          | 34 |
| 21.   | Gravitation and the photon   | 35 |
| 22.   | Perturbation from gravitation  | 36 |
| 22.1. | Gravitational scattering at a very heavy particle                      | 37 |
| 23.   | Compton scattering of gravitation gravons at electrons                 | 38 |
| 24.   | Tests for comparing with Einstein's theory of general relativity       | 41 |
| 24.1. | GPS clocks   | 41 |
| 24.2. | Orbital periods of planets and flyby periods                           | 42 |
| 24.3. | Amended Shapiro delay  | 42 |
| 24.4. | Binary pulsars   | 42 |
| 24.5. | Antiparticles under gravitation  | 42 |
| 24.6. | Photons under gravitation  | 42 |
| 24.7  | Further remarks  | 42 |

25. Acknowldegements

References