

CONTENTS

1. Introduction	3
2. The proper time density	4
3. The gravitational potential from the proper time density	6
4. The Lagrangian of a mass m in a gravitational potential from a point like mass M	8
5. The Hamiltonian of a mass in a gravitational potential	8
6. The Hamiltonian for the orbit in polar coordinates in a central gravitational potential	9
7. The perihelion precession of Mercury, its orbital period and the flyby anomaly	10
8. The Gravity B Probe	11
9. The B-potential	13
10. Auxiliary equations of gravitation	15

Date: 15.12.2012; Hartwig Poth, Germany, e-mail: hupoth@gmail.com.

11. The four force from gravitation	18
12. A monopole radiation	21
13. The radiation from binary stars	22
13.1. Quasi multipole radiation from binary stars	22
13.2. B-potential radiation from binary stars	25
14. The Langrangian and the spin of the gravitational field	27
15. The deflection of light by gravitation	29
16. A 'metric' for light in a gravitational potential	31
17. The amended Shapiro effect	32
18. Is there a gravitational 'metric' for masses?	33
Quantum mechanics of gravitation	34
19. Gravitation and the electron	34
20. An anti-particle in a gravitational potential	35
21. Gravitation and the photon	36
22. Perturbation from gravitation	37
22.1. Gravitational scattering at a very heavy particle	38
23. Compton scattering of gravitation gravons at electrons	39
24. Tests for comparing with Einstein's theory of general relativity	42
24.1. GPS clocks	42
24.2. Orbital periods of planets and flyby periods	43
24.3. Amended Shapiro delay	43
24.4. Binary pulsars	43
24.5. Antiparticles under gravitation	43
24.6. Further remarks	43
25. Acknowldegements	43
References	43