Contents

The content of this thesis is based on the following published works

1. Testing gravity at the second post-Newtonian level through gravitational deflection of particles having mass, A. Bhadra, K. Sarkar and K.K. Nandi, *Phys. Rev.* D 75, 123004 (2007)

2. Brans-Dicke theory: Jordan vis-a-vis Einstein Frame, A. Bhadra, K. Sarkar, D. P. Datta and K. K. Nandi, *Mod. Phys. Letts. A* **22**, 367 (2007)

3. Strong field gravitational lensing in the Brans-Dicke theory, K. Sarkar and A. Bhadra, *Class. Quant. Grav.***23**, 6101 (2006)

4. On static spherically symmetric solutions of the vacuum Brans-Dicke theory, A. Bhadra and K. Sarkar, *Gen. Rel. Grav.* **37**, 2189 (2005)

5. Wormholes in vacuum Brans-Dicke theory, A.Bhadra and K. Sarkar, *Mod. Phys. Letts. A* **20**, 1831 (2005)