I would like to express my sincere gratitude to my thesis advisor, Prof. B. G. Anandarao for his constant encouragement and help throughout the period of my Ph.D. The freedom he has given me to work independently as well as his encouragement to pursue new ideas along with his help has played a crucial role in my research work. Scientific discussions with him have always been fruitful and I am greatly indebted to him for this. It is being the nature of him to concern his students including their personal lives did not miss to make its signatures on me. I also thank him for critically going through the thesis and making useful corrections and suggestions.

It was always a pleasure to discuss any topic in science with Prof. J. N. Desai. Such discussions have given me a good understanding in many branches of science. I am also thankful to him for going through my thesis in detail and giving me useful suggestions.

I would also like to express my gratitude to Prof. S. R. Pottasch, Kapteyn Astronomical Institute, Groningen, The Netherlands. His help on the service observations during our collaborative work and the discussions I had with him during the course of these works had been extremely beneficial to me. His in-depth knowledge on planetary nebulae and his interest on my work have motivated me to a great extent.

I am also thankful to Prof. M. R. Deshpande, Prof. U. C. Joshi, Dr. H. O. Vats, Dr. T. Chandrasekhar, Dr. N. M. Ashok, Dr. D. P. K. Banerjee, Dr. A. Singhal and Dr. P. Janardhan for their concern towards my thesis work and their constant encouragement. I would also like to thank the members of the Academic
Committee of PRL for giving me useful suggestions and encouragements during many instances.

I thank Mr. N. S. Jog, Mr. K. S. Manian and Mr. F. M. Pathan for their help whenever I was in need. It was always a good experience to conduct observations with Mr. R. T. Patel. His company made the observation campaign memorable. I also thank Mr. R. K. Mahadkar, Mr. K. J. Shah, Mr. H. I. Pandya, Mr. D. Stephen, Ms. S. K. Jani, Ms. Uma Desai, Ms. M. Mira for their helps during this period. On many a occasion, the staff members of PRL computer center and the library had made my related jobs much easier. I am extremely thankful to them for this. I thank the Gurushikhar observatory staffs and Thaltej workshop staffs for their helps in many occasions. I would also like to thank Mr. Stephen Smartt, the service manager, ING telescopes, La Palma for helping me to retrieve the data for the observations conducted there.

Furthermore, the company and the co-ordination I got from Seema, Abhijit and Nanda was memorable. Nanda, a close friend of mine had also been very supportive during many occasions.

I would always remember the fine friendship I shared with Watson and his affection towards me. I also thank him for going through a part of the thesis. I am also thankful to Ashish for correcting some chapters of the thesis. I always had nice time with Ramaswamy and the close association. I thank to Kunu, Aparna and Kamath for having nice time with me during my stay here. I thank S. Ganesh for his helps. I am also thankful to many members of the students community at PRL for the many memorable moments I shared with them. I would like to thank Poulose, Biju, Siva, Jagadheesha, Pattu, Rajesh, Alam, Jitti, Soumen, Sudhir, Sankar, Rishi and Arun just to name a few.

The facilities and the freedom that one gets in PRL to work has really made an impression on me. I would like to thank the Department of Space, Government of India without whose financial support this work would not have been possible.
I would also like to pay my respects to the anonymous tax-payers of the Nation for being the original source of this financial support.

Finally, the love and care that I received from Amma, Appa, Kannan, Ravi, Akkal, Aththan and my nephews Kumar and Sekhar had always given me moral support, irrespective of whether I am with them or staying away. Simple thanks may not be a proper word to express my feelings towards them.