Acknowledgements

It is with profound gratitude that I express by sincere thanks to my supervising guide, Prof. V.P.N.Nampoori, for the motivation and support, which ultimately led to the completion of this thesis.

I am grateful to Prof. G. Ravindrakumar of Tata Institute of Fundamental Research, Mumbai for allowing me to carry out the X-ray emission studies in his group.

I sincerely acknowledge the support, advice and inspiration given to me by Prof. C P Girijavallabhan, all through my research career at CUSAT. I am grateful to Prof. V M Nandakumaran, Prof. P Radhakrishnan, Prof. R Pratap and Mr. M Kailasnath for their timely support and advice.

It is a pleasure to express my sincere thanks to my seniors, Dr. Riju C Issac, Dr. S S Harilal, Dr. Geetha K Varier, Dr. Bindhu C V and Dr. Shelly M John, who had helped me a lot during the initial stages of my research program.

I extend my sincere thanks Dr. Rajeev P P, Dr. Sudeep Banerjee, Dr. Arvinder Sandhu and Dr. Vinod Kumarappan, of TIFR for helping me in carrying out the X-ray emission studies.

I sincerely thank Dr. Deepthy for the support, encouragement and help given to me during the final stages of this work.

My sincere thanks to all my friends and colleagues at ISP, Dr. Binoy, Dr. Anceesh, Dr. Prasanth, Dr. Unnikrishnan, Dr. Jayan Thomas, Dr. Ajith kumar, Dr. Santhosh
Chidangil, Dr. Nibu, Dr. Bindu Murali, Jibu, Premkishore, Dr. Sajan, Dr. Achamma, Dr. Annieta, Dr. Thomas Lee, Dr. Sureshkumar, Dr. Pravitha, Dr. Rajesh S., Geetha, Santhi, Rekha, Dilna, Sr. Ritty, Rajesh M, Vinu, Manu, Jijo, Thomas, Dann, Lyjo, Litty, Jayasree, Sheeba, Parvathy, Saritha and Sajeev for all their help and support. I would also like to thank Ms. Hema B Nair, Ms. Maya and all other administrative staff members of ISP for their timely help.

I remember with deep sense of gratitude, the support from my parents, brothers Praveen and Premjith, in-laws and all other relatives. I have no words to express my gratitude to my wife Kala and my son Adithya, for their encouragement and patience during the successful completion of this work.

Thanks to the Almighty God

Pramod Gopinath