ACKNOWLEDGMENTS

It is a great joy to reach the first milestone of my research career, and I am deeply indebted to everyone who helped, supported, loved and guided me in this journey both personally and professionally. First of all, I would like to thank to my parents, my teachers, and the institutions I have studied, who/which helped me to reach at this platform.

I express my heartfelt respect and gratefulness to my supervisor Dr. Jeewan Chandra Pandey, who introduced me the very exciting fields of “Stellar astrophysics” and “X-ray astronomy”. I am greatly inspired by his hardworking, and very thankful to him for the support and guidance on my way to become an independent researcher. He always pushed me to achieve my upperlimit and showed me the way several times to get out of difficult situations. I am very proud to be his first Ph.D. student.

It is my pleasure to thank all my collaborators and colleagues, including Drs. Igor S. Savanov (INASAN, Russia), G. Taş (EUO, Turkey), V. S. Airapetian (NASA GSFC, USA) for their contributions as well as sharing their knowledge through the comments and suggestions.

I like to express my heartful gratitudes and appreciations to the present and past directors of ARIES, viz. Dr. A. K. Pandey, Prof. Ram Sagar, and Dr. Wahab Uddin, for the continuous support, over all guidance, and the inspiration they have given during my Ph.D. I also sincerely acknowledge the moral support, scientific discussions, and constructive scientific criticisms I have received at different stages of my Ph.D. career from Drs. Brijesh Kumar, Indranil Chattopadhyay, Kuntal Misra, Santosh Joshi, Yogesh Joshi, M. Gopinathan, Manish Naja, Biman J. Medhi, S. B. Pandey, Alok Chandra Gupta, Amitesh Omar, D. V. Phani Kumar, Hum Chand, Manish Naja, han, Narendra Singh, Ramakant Yadav, Sneh Lata, Saurabh, U. C. Dumka, and M. Singh for the discussions on various issues.

My heartfully thanks to all of my past and present colleagues for the golden moments we have spent together. A special thanks to my research group members, viz Arti Joshi, Bharti Arora, and Manoj Patel for their useful discussions and active support several times during my Ph.D. I express my happiness and thanks to my friends Neha and Abhishek, my past room-mates Praveen and Vinit, my time-to-time office-mates Subhash, Krishna, Arti, Aditi, Sumit, Devesh, Shilpa, Priyanka, Ugam, and Vishi for spending those wonderful moments.
I also thank my seniors Subhash, Krisna, Rupak, Sumana, Tapas, Manoj, Arun, Sarvan, Ram Kesh, Brajesh, Ravi, Narendra, Tapaswini, Sumit, Rajiv, Subhash, Hema, Archana, Piyush, Alka, and Sravanti for always being ready to support in every aspect and caring as a family member. My loving and caring juniors and friends like Arti, Aabha, Mukesh, Aditi, Parveen, Bhaskar, Pravekar, Gaurav, Pallavi, Vivek, Ansul, Jhilik, Inakshi, Aparna, Chayau, Baisakhi, Milan, Sakti, Vinit, Mrideweek, Raman, Nibodita, Anjusha, Piyali, Raya, Sapna, Pankaj, Kuldeep, Ashwini, Ekta, Navdip, Vidushi, Rakesh, Gaurav, Priyanka (Jahan), Tirthendu, Jayanand, Shilpa, Bharti, Krishan, Sadhna, Priyanka (Srivastava), and Alexender also deserves to be acknowledged for the nice unforgettable moments they have shared with me during these years of Ph.D. I also acknowledge Pradip da, Abhijit da, and their family members for the pro-active help and support they have given during my Ph.D. years.

I heartily acknowledge ARIES, for being my home for all these years of Ph.D. I also acknowledge DST for funding me. Moreover, part of my research was funded by the Indo-Russian DST-RFBR project reference INT/RUS/RFBR/P-167 which is also sincerely acknowledged. This research is made with the ground-based as well as space-based observatories. I acknowledge the entire team of 2.0-m IUCAA Girawali Observatory telescope, 1.3-m Devasthan Fast optical telescope, 1.04-m Sampurnand Telescope, 0.36-m Goddard Robotic Telescopes, Swift, XMM-Newton, Hipparcos, SuperWASP, ASAS observatories and the NASA Exoplanet Archive, All Sky Automated Survey archive, Hipparcos archive, Swift archive facilities.

I am also thankful to all the ARIES staff and office employees who helped me several times at library, administration, computer section, account section, electrical section, civil and mechanical sections etc. The canteen staffs, the security guards and the gardeners at ARIES who made a very helping and pleasant environment at ARIES and hence also deserve to be acknowledged. A handful of thanks also goes to Prof. S. K. Pandey, Drs. N. Brahmee, N. K. Chakradhari, and all the members of physics department of Pt. Ravishankar Shukla University, Raipur for their support. I also want to thank Mr. Goswami and Sheetal for all their support at Raipur.