

Acknowledgement

.....It is impossible to start with a specific name ...

It is very difficult to name all the sources of inspiration; moreover, words are often too feeble a mode of revealing one's sentiments and feelings of indebtedness. At the outset, I would like to take this opportunity to express my deep sense of gratitude to my research supervisor, Prof. Sandip Chatterjee, for introducing me to the field of Condensed Matter Physics and to witness the enormous progress made in this fascinating field of study. His keen interest, excellent guidance, encouragement, critical discussions and valuable suggestions provided continuous impetus for the successful completion of this work.

I am also grateful to Prof. A. K. Ghosh, Department of Physics, Banaras Hindu University for his help which made it easy for me to work in such an inter-disciplinary subject.

I express my gratitude to Prof. B. N. Dwivedi, Prof. O. N. Singh and current Head of the Department Prof. Debaprasad Giri for providing me required facilities of the department. I also wish to thank my RPC members Prof. Debaprasad Giri, Dr. Shail Upadhyay, and Prof. R.S. Tiwari, Department of Physics, Banaras Hindu University for the invaluable inspiration and numerous insightful suggestions during the entire course of this research. I am also grateful to faculty members Prof. Rajendra Prasad, Prof. Prabhakar singh, Dr. Anita Mohan, Dr. P. C. Pandey, Dr. Shail Upadhyay Dr. S Tripathi , Dr. S. K. Mishra, Dr.A. Parmar Dr. S Patil Dr. Shraddha Mishra and Dr P.Dutta for their valuable suggestions and help time to time in my research period. I am also appreciative to Dr. U. N. Singh, Dr. A. K. Tripathi, and Dr. S. K. Singh for their kind encouragements and motivation. I am also thankful to all the technical, non-teaching as well as official staffs of the Department of Physics, IIT (BHU) for their assistance when needed and also for providing me numerous reliefs at times.

I feel short of words to express my appreciation, gratitude and indebtedness to my father Sri Swatantra Kumar Shukla and mother Smt. Radhika Shukla and my uncle

Sri Vishnu Datt Shukla , Sri Krishna Datt Shukla , Sri Shiv Datt shukla , Sri Ashok Shukla, Sri Ashwini Shukla, and Sri Awadhesh Shukla for their unbounded love, blessings, encouragement and supports in various ways. I thank them for instilling in me the importance of education and balance in life. I also wish to share my appreciation to my elder brothers Mr. Sanjay shukla, Mr.Pramod shukla ,Mr. Prashant Mishra, Mr Prateek Mishra, Mr. Mr Ajay Shukla, and Mr. Kireet shukla for their blessings and support. I would also want to share my love and affection to my younger brothers Rahul shukla and his wife Sarika shukla, Praveen shukla , Jai Kishan shukla , Manoj shukla , Nandan, Anoop, Nitesh , Nilesh , Deepak , Golu, Sani mishra and my cute nephew Hariom and Avanish for their kindness, warmth and their lovable company. Furthermore, I heartily gratitude and indebtedness to my father-in-law Sri Tulsi prasad mishra and mother-in-law Smt. Asha mishra for their blessings.

I cannot conclude my acknowledgements without expressing my deep feeling of indebtedness to my grandfather Late Raghunath Shukla for their blessings, which is constantly pouring on me even he is not here to support me physically but he is always there in my mind to guide me in tough situations and grandmother Smt. Anara devi shukla without whom I would never make it this far in life.

It is with sincere gratitude that I wish to thank my Senior labmates Dr. Gopeshwar Dhar Dwivedi , Dr. Prashant Shahi , Dr. Abhishek Kumar, Dr. Shiv Kumar and colleagues Mr. Abhishek singh , Mr. Rahul singh , Mr. Satyam , Mr Prince, Mr. Arkab deb pal , Mr. Vinod, Ms. Prajyoti singh Mr. Brijmohan, Mr. Somnath, and Ms. Piyali Maiti of my lab and my departmental research colleagues Dr. Bheeshma Pratap Singh, Dr. Raghvendra Pandey , Mr. Praveen Kumar Mr. B. K. Singh, and Mr. D. K. Gupta, for the help and their awesome company.

I would like to mention the name of my beloved wife Smt. Devika Shukla for all her sacrifices, lovable company and many more things into my life. I would like to mention the name of my two precious diamonds in the form of my son and daughter Mridul and Manvi shukla respectively and my cute niece Janhvi shukla for their lovable company.

Many others that have been involved also deserve recognition. It is however, not possible to list them all here. Their support in this effort is, however, greatly appreciated but this acknowledgement would be incomplete if the name of great visionary, Bharat Ratna Pt. Madan Mohan Malviyaji, is not mentioned, who made this divine centre of knowledge –Banaras Hindu University. Deepest regards to him. Last but not least, I wish to thank all my friends and foes and the persons whose names have not been included on this piece of paper for extending their cooperation directly or indirectly.

Finally, I am grateful to Almighty for giving me patience to make this endeavor a success.

Sincerely
(Kaushal Kumar Shukla)