

# Acknowledgements

*This work was carried out at **High Energy & Cosmic Ray Research Centre, University of North Bengal** with the financial assistance from the **Department of Science and Technology, India**.*

*I would like to express my warmest thanks to:*

*Supervisor of this thesis - **Dr. Arunava Bhadra**, who fearlessly accepted me as PhD student for his project and was the main creator of the great ideas, techniques and whole background of this thesis. We experienced together all the ups and downs of routine work, the shared happiness of success and the depression of failure when (sometimes) everything went wrong. He managed to teach me how to work independently (which is very important), but at any time, his useful advice was available to me. In my opinion, this is how an ideal supervisor should be. It is a real pleasure to work and communicate with such a polite, honest and open-minded person. I would also like to acknowledge his language abilities which were extremely useful, particularly in the beginning of my work and life in HECRRC.*

*My teacher - **Dr. Govinda Mazumdar** from **TIFR**, who kindly allowed me to work in TIFR. He has helped me greatly during all these years (special appreciation for helping me to learn some simulation programs like GEANT4, HEED, MAGBOLTZ & GARFIELD) and has always been extremely supportive and nice to me. It was only his great help in science and “beyond science” life that I got the chance to initiate and complete this thesis. He is now working actively in the development of INO detectors.*

*Collaborator - **Dr. Partha Sarathi Joarder** from **Bose Institute**, who generously accommodated me and let me continue to work in Bose Institute. His great support, huge work experience and patience were necessary for finishing this thesis. Colleague and co-member of our small “HECRRC group” - **Dr Samir Sarkar** & **Mr. Arindam Mukherjee**, for their enormous everyday help in work and life, wise advice and tolerance of me as their “office mate”.*

*All present and former colleagues, permanent and “visiting” members of the High Energy & Cosmic Ray Research Centre - **Dr. R. K. Dey, Dr. Subhranshu Ghosh, Mr. Prabir Banik, Mr. Sadhan Paul** and all others, for their assistance and providing an excellent working atmosphere to me. Special thanks to my friends and family members who stand by me in my every ups and downs.*