ACKNOWLEDGEMENT

The work described in this thesis was carried out in the Nuclear Physics laboratory of department of Physics N.B.U. under the guidance of Professor N.Choudhuri during 1978-1982, under the U.G.C. Faculty Improvement Programme for College teachers.

The author would like to acknowledge the award of teacher fellowship for a period of four years and some financial assistance by the University Grants Commission through the University of North Bengal.

Isotope group of Bhaba atomic research centre is thanked for supplying the gamma ray sources for the investigation described in the thesis.

The author also wishes to thank his colleagues in the laboratory, particularly Dr.S.K.Sengupta,G.C.Goswami,N.C.Paul and S.C.Das for active collaboration in successfully carrying out the investigation described in the thesis.

The technical staff, particularly Mr.Pasang Tamang, Kamal Chhetri, Kantilal Das, Ambaresh Chettri are thanked for their willing help in setting up of the apparatus.

The author wishes to thank Dr.I.Øverbo, Dr.Tseng, Dr.G.Girard Dr.H.Scofield and Dr.K.K.Sud for sending some data with published papers on atomic pair production near threshold.

The author wishes to thank the teachers of the University

Department of Physics, particularly the Heads of the Department

during the tenure of this project for their interest in this

work.

The author thanks the Governing Body of Siliguri College for granting study leave under the Faculty Improvement Programme of U.G.C.

Author also likes to thank Sri N.C.Ghosh who has traced the diagram from the original presented in this thesis. Mr. M.Chakraborty is also thanked for typing the thesis.

Lastly I must express my sincere gratitude to Bijaya Bose my wife without whose patience and encouragement this work would not have been possible.

Jahnabi Bhushan Basu.

dept. of Physics.

N. B. U