CONTENTS

PREFACE.  

LIST OF FIGURES AND PHOTOGRAPHS.  

LIST OF TABLES.  

CHAPTER 1 INTRODUCTION: A REVIEW OF THE EXISTING LITERATURE HAVING BEARING ON THE PROBLEM STUDIED.  

1.1 Multiparticle production Models in hadron–hadron interactions.  

1.2 Multiparticle production Models in hadron–nucleus interactions.  

1.3 Emission Mechanisms of nucleons and fragments caused by nuclear disintegrations.  

CHAPTER 2 EMULSION TECHNIQUE-METHODS OF MEASUREMENTS.  

2.1 Details on Nuclear Emulsion  

2.2 Experimental Details: Measurement procedures.  

CHAPTER 3 ENERGY DEPENDENCIES OF AVERAGE CHARGED PARTICLE MULTIPLICITY IN HADRON–HADRON COLLISIONS.  

3.1 Abstract  

3.2 Introduction.  

3.3 Compilation of Experimental Data  

3.4 Energy dependences of Experimental Data on average multiplicity.
3.5 Conclusions.

3.6 Discussions.

CHAPTER 4 CHARGED PARTICLE MULTIPLICITY IN HADRON-
NUCLEUS COLLISIONS AND ENERGY DEPENDENCES
OF MULTIPLICITY.

4.1 Introduction.

4.2 Charged particle multiplicity in hadron-
nucleus collisions at different incident
energies.

4.3 Energy dependences of \( \langle n_a \rangle \) on Laboratory
Energy and Centre-of-mass Energy.

4.4 Compilation of Experimental data to study
energy dependences of multiplicity.

4.5 Determination of constants \( m, n \) and \( p, q \).

4.6 Conclusions.

CHAPTER 5 ENERGY AND NUCLEAR SIZE DEPENDENCES OF
NORMALIZED MEAN MULTIPLICITY IN
SERPUKHOV AND FNAL ENERGIES.

5.1 Introduction.

5.2 Various definitions of normalised mean
multiplicity.

5.3 Normalised mean multiplicity in
hadron-emulsion nuclei collisions at
50, 69 and 200 GeV.
5.4 Energy dependences of normalised mean multiplicity.

5.5 Mass number dependences of normalised mean multiplicity.

5.6 Discussions and Conclusions.

CHAPTER 6 DISPERSION OF MULTIPLETICITY DISTRIBUTIONS AND TWO-PARTICLE CORRELATIONS IN HADRON-EMULSION COLLISIONS.

6.1 Introduction.

6.2 Dispersion of multiplicity distribution, D, and two-particle correlations between the secondaries at 50, 69 and 200 GeV interactions.

6.3 Dependences of D on \( <n> \) in hadron-hadron and hadron-emulsion collisions.

6.4 The ratio \( <n>/D \) in hadron-hadron and hadron-emulsion collisions.

6.5 Correlation parameter in hadron-hadron and hadron-emulsion collisions.

CHAPTER 7 ANGULAR AND PSEUDORAPIDITY DISTRIBUTIONS OF SECONDARY PARTICLES PRODUCED AT 50, 69 AND 200 GeV HADRON-NUCLEI COLLISIONS.

7.1 Angular distributions of the secondaries.

7.1.1 Introduction.

7.1.2 Cos\( \theta \) distributions of the secondaries.

7.1.3 Median angles of the secondaries.

7.1.4 Logtan\( \theta/2 \) distributions of the secondaries.

7.1.5 Discussion.
7.2 Pseudorapidity distributions of the secondary particles.

7.2.1 Introduction.

7.2.2 Observations on the experimental results.

CHAPTER 8 A STUDY ON VARIOUS CHARACTERISTICS OF PARTICLES AND FRAGMENTS Emitted FROM THE DISINTEGRATED NUCLEI.

Introduction.

8.1 Multiplicity distributions of heavy prongs.

8.2 Energy distributions of black tracks.

8.3 Angular distributions of black tracks.

8.4 Angular distributions of grey tracks.

8.5 Heavy fragments characteristics.

8.5.1 Introduction.

8.5.2 Experimental procedures.

8.5.3 Angular distribution of heavy fragments.

8.6 Complete disintegration of heavy emulsion nuclei at 50 GeV \( \pi^- \) interactions.

8.6.1 Introduction.

8.6.2 Selection of events.

8.6.3 Experimental results.

8.7 Correlation between \( \langle n_p \rangle \) and \( N_h \) at 50 GeV \( \pi^- \), 69 GeV and 200 GeV proton interactions.

8.7.1 Introduction

8.7.2 Experimental results.
8.7.3 Discussions.

CONCLUDING REMARKS.

REFERENCES.

ACKNOWLEDGEMENTS.

DECLARATION.