

Precision Measurements of A_1^n in Deep Inelastic Regime

E06-014 Collaboration

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Abstract

I. INTRODUCTION

A. Spin Puzzle

B. Definition of A_1

C. Theoretical Approaches

1. *Perturbative QCD*

2. *Other Approaches*

II. EXPERIMENTAL DETAILS

A. Extracting A_1 from Double-Spin Asymmetries

B. Polarized Electron Beam

C. Polarized ^3He Target

D. BigBite Spectrometer

E. Pion Rejection

F. N_2 Target Dilution Factor

G. Corrections for Pair-Produced Electrons

H. Radiative Corrections

I. A_1 on ^3He

III. FROM ^3He TO NEUTRON

A. Effective Neutron Polarization

B. Nuclear Corrections

C. A_1 on the Neutron

IV. SPIN-FLAVOR DECOMPOSITION

A. Decomposition Method

B. Results

V. DISCUSSION

A. Past Experiments

B. Agreement with Theory

C. Future Experiments

ACKNOWLEDGMENTS