

CONTENTS

| | | <u>PAGE</u> |
|--------------|---|-------------|
| | ACKNOWLEDGEMENTS | (i) |
| | Abstract | (ii) |
| | List Of Figures | (iv) |
| | List Of Tables | (vi) |
| CHAPTER I | INTRODUCTION | 1 |
| CHAPTER II | GROUND STATE OCCUPANCIES OF f-p-g SHELL NUCLEI | 12 |
| | A. General Formalism | 16 |
| | B. Results And Discussion | 25 |
| CHAPTER III | VARIABLE TRANSFORMATION AND REPRESENTATION OF DENSITY FUNCTION | 44 |
| CHAPTER IV | MOMENTS AND EIGENVALUES | 67 |
| | A. New Methods For Calculating Eigenvalues | 68 |
| | B. Cornish Fisher Expansion-Applications | 83 |
| | C. Results And Discussion | 94 |
| CHAPTER V | STATISTICALLY AVERAGED INVERSE ENERGY WEIGHTED SUM-RULES | 109 |
| | A. Theory | 110 |
| | B. The CLT Result | 115 |
| | C. Extension To Configurations | 116 |
| | D. Correction To Ground-State Energy | 128 |
| CHAPTER VI | SUMMARY AND FUTURE PROSPECTS | 142 |
| APPENDIX I | A. Representation Of Density Function Transformation Method | 150 |
| | B. Representations Of Pearson's Distribution Curves | 155 |
| BIBLIOGRAPHY | | 163 |