

CONTENTS

	Page
PREFACE	VII
EDITOR'S NOTE	IX

SESSION I

SHELL MODEL EVIDENCE IN NUCLEI

FOUNDATIONS OF THE NUCLEAR SHELL MODEL by R. J. Eden	3
SUMMARY OF REMARKS ON NUCLEAR MANY-BODY PROBLEM by K. A. Brueckner.	13
EVIDENCE FOR NUCLEAR FORCES FROM THE STRUCTURE OF LIGHT NUCLEI by B. H. Flowers	17
A NUCLEAR PSEUDO-POTENTIAL by T. H. R. Skyrme	20
<i>Discussion</i> (Rosenfeld, Flowers, Brueckner, Jastrow, De-Shalit)	24
NUCLEAR SUPERCONDUCTIVITY by D. Pines	26
<i>Discussion</i> (Bohr, Brueckner, Eden, Mottelson)	28
SHORT RANGE FORCES AND NUCLEAR SHELL THEORY by M. Moshinsky.	29
SHELL MODEL ANALYSIS OF NUCLEAR ENERGIES by I. Talmi	31
INTERMEDIATE COUPLING by D. Kurath	46
<i>Discussion</i> (De-Shalit, Kurath, Talmi, Eden, Bohr, Flowers)	62
GAMMA DE-EXCITATION STUDIES IN LIGHT NUCLEI by D. A. Bromley	64
EXCITED STATES OF Be ⁸ by V. Meyer and H. H. Staub.	75
LEVELS IN ²⁴ Cr ⁵⁰ , ²⁴ Cr ⁵² , ²⁴ Cr ⁵³ AND ²⁴ Cr ⁵⁴ by W. C. PORTER, M. A. Rothman, D. M. Van Patter and C. E. Mandeville	76
ON SPIN-ORBIT COUPLING IN THE NUCLEON-NUCLEON INTERACTION by J. L. Gammel and R. M. Thaler.	76
0 ⁺ -FIRST EXCITED STATES OF O ¹⁶ AND Ca ⁴⁰ by M. Umezawa	77
EVIDENCE ON COUPLING SCHEMES FROM NUCLEAR REACTIONS by M. K. Banerjee	77
NUCLEAR LEVELS IN P ³⁰ AND S ³³ by C. H. Paris, C. van der Leun and P. M. Endt	78
SHELL MODEL EFFECTS IN NUCLEAR LEVEL DENSITIES by A. A. Ross	79

SESSION II

THE UNIFIED MODEL

THE THEORETICAL DESCRIPTION OF NUCLEAR SPECTRA by B. Mottelson	83
<i>Discussion</i> (De-Shalit, Mottelson, Bohr)	98
EXPERIMENTAL NUCLEAR SPECTROSCOPY IN THE HEAVY ELEMENT REGION by I. Perlman and F. Asaro	100
DE-EXCITATION OF THE SECOND EXCITED STATES OF Pt ¹⁹² , Pt ¹⁹⁴ AND Pt ¹⁹⁶ by D. E. Alburger	107

	Page
APPLICATION OF THE COLLECTIVE MODEL TO LIGHT NUCLEI by D. A. Bromley	108
THE OSCILLATOR NUCLEUS by T. D. Newton	118
FISSION by L. Wilets	122
ANGULAR ANISOTROPY OF NEUTRON-INDUCED FISSION OF Pu ²³⁹ by J. E. Brolley	134
FOUNDATIONS OF THE COLLECTIVE MODEL by R. E. Peierls <i>Discussion</i> (Rosenfeld, Peierls)	135 141
MOMENT OF INERTIA CALCULATIONS by T. H. R. Skyrme	142
ON THE METHODS FOR CALCULATING MOMENTS OF INERTIA OF NUCLEI by H. J. Lipkin	144
<i>Discussion</i> (Bohr, Mottelson, Peierls, Lipkin)	149
EVIDENCE FOR THE EXISTENCE OF COLLECTIVE VIBRATIONAL LEVELS IN Dy ¹⁶⁰ and Sm ¹⁵² by S. Ofer	151
DECAY OF Lu ¹⁷⁰ by P. Boskma and H. de Waard	152

SESSION III

GROUP-THEORETICAL METHODS IN NUCLEAR SPECTROSCOPY

THE SENIORITY QUANTUM NUMBER AND ITS APPLICATIONS TO NUCLEAR SPECTROSCOPY by G. Racah	155
A SHELL MODEL INTERPRETATION OF COLLECTIVE MOTION by B. H. Flowers	161
<i>Discussion</i> (Mottelson, Rosenfeld, Racah, Flowers, Talmi, De-Shalit, Umezawa, Lipkin)	166
QUANTUM NUMBERS IN NUCLEAR SPECTROSCOPY by M. Umezawa	170

SESSION IV

ELECTROMAGNETIC TRANSITIONS AND HEAVY NUCLEI

ELECTROMAGNETIC TRANSITIONS AND ISOTOPIC SPIN IN THE LIGHT NUCLEI by D. H. Wilkinson	175
<i>Discussion</i> (Bohr, Wilkinson, Talmi, Goldhaber, De-Shalit)	200
EFFECTS OF CONFIGURATION MIXING ON ELECTROMAGNETIC TRANSITIONS by A. De-Shalit	202
<i>Discussion</i> (Mottelson, Talmi, De-Shalit, Rose)	209
GAMMA TRANSITIONS BETWEEN THE EXCITED STATES OF O ¹⁶ by H. Morinaga and S. A. E. Johansson	211
l-FORBIDDEN AND UNFAVORED ALLOWED BETA-TRANSITIONS by A. Arima and H. Horie	213
SYSTEMATICS OF NUCLEAR ENERGY LEVELS AND MULTIPOLE TRANSITIONS IN THE LEAD-208 REGION by I. Bergström	215
<i>Discussion</i> (De-Shalit, Bergström, Goldhaber, Bohr)	244

Page

THEORETICAL INVESTIGATIONS IN THE Pb ²⁰⁸ -REGION by S. Wahlborn	246
ELECTRIC MONOPOLE TRANSITIONS IN Ge ⁷⁰ AND Zr ⁹⁰ by D. E. Alburger	252
THE INTERNAL COMPTON EFFECT. A DETERMINATION OF CROSS SECTION AND ANGULAR CORRELATION by K. Siegbahn, T. Lindqvist and B. G. Pettersson	255
ANGULAR CORRELATION MEASUREMENTS by T. Lindqvist	256
THE DECAY OF Be ¹³³ AND THE EXCITED STATES OF Cs ¹³³ by S. Koićki, A. Mijatović and J. Simić	257
THE DETERMINATION OF THE RELATIVE GAMMA-RAY INTENSITIES AND THE K-CONVERSION COEFFICIENTS IN THE DECAY OF Bi ²⁰⁶ , BY MEANS OF THE EXTERNAL CONVERSION METHOD by T. Novakov and S. Hultberg	257
THE RADIATIONS OF TWO ODD-A ISOTOPES OF OSMIUM by V. S. Dubey, S. S. Malik, C. E. Mandeville and A. Mukerji	258
COULOMB EXCITATION OF SECOND 2 ⁺ STATES IN Os ¹⁹⁰ , Os ¹⁹² and Pt ¹⁹⁴ by R. Barloutaud, P. Lehmann and A. Levêque	259

SESSION V

EFFECTS OF THE FINITE SIZE OF THE NUCLEUS

PHENOMENA AFFECTED BY THE FINITE SIZE OF THE NUCLEUS by M. E. Rose	263
<i>Discussion</i> (Tauber, Rose)	271
ACCURATE MEASUREMENTS OF CONVERSION COEFFICIENTS by A. H. Wapstra	272
DIRECTIONAL CORRELATION OF EO CONVERSION ELECTRONS by E. L. Church	280
INTERNAL CONVERSION IN Pu ²³⁹ by D. A. Bromley	283
INTERNAL CONVERSION RATIOS IN THE LEAD-208 REGION by I. Bergström	287
CHEMICAL SHIFTS OF PHOTO- AND AUGER ELECTRON LINES by K. Siegbahn, C. Nordling and E. Sokolowski	291
INTERNAL CONVERSION COEFFICIENTS OF M1 GAMMA RAYS of Au ¹⁹⁹ AND Au ¹⁹⁵ by P. J. Cressman and R. G. Wilkinson	294
A CALCULATION OF FINITE-SIZE EFFECTS ON CONVERSION COEFFICIENTS USING THE UNIFIED NUCLEAR MODEL by A. S. Reiner	296
CAPTURE-POSITRON BRANCHING RATIOS by P. F. Zweifel	300
<i>Discussion</i> (Wahlborn, Zweifel)	315

SESSION VI

BETA DECAY AND PARITY

THEORY OF THE CLASSICAL β -DECAY MEASUREMENTS by E. J. Konopinski	319
PARITY AND HELICITY (Editor's Note)	334

THEORETICAL IMPLICATIONS OF PARITY VIOLATIONS IN BETA INTERACTIONS by T. D. Lee	336
EXPERIMENTAL EVIDENCE FOR NON-CONSERVATION OF PARITY AND CHARGE CONJUGATION IN BETA DECAY by C. S. Wu	346
ELECTRON-NEUTRINO ANGULAR CORRELATION by H. Frauenfelder	366
ELECTRON NEUTRINO-CORRELATION by P. E. Cavanagh	370
<i>Discussion</i> (Kofoed-Hansen, Cavanagh, Talmi)	374
PARITY CONSERVATION IN STRONG INTERACTIONS by D. H. Wilkinson	375
MEASUREMENT OF LONGITUDINAL POLARIZATION OF POSITRONS by M. Deutsch	376
MEASUREMENT OF ELECTRON POLARIZATION by H. Frauenfelder	378
MEASUREMENT OF LONGITUDINAL POLARIZATION OF β -PARTICLES BY MÖLLER SCATTERING by C. S. Wu	380
DETECTION OF Ga^{66} POLARIZATION BY THE ANNIHILATION-IN-FLIGHT RATE IN POLARIZED MATTER by S. Frankel, P. G. Hansen, O. Nathan and G. M. Temmer	385
MEASUREMENTS OF LONGITUDINAL POLARIZATION OF BETA-PARTICLES by H. de Waard, O. J. Poppema and J. van Klinken	388
ELECTRON POLARIZATION by P. E. Cavanagh	394
MEASUREMENT OF BETA-RAY POLARIZATION BY DOUBLE COULOMB SCATTERING by H. J. Lipkin, S. Cuperman, T. Rothen and A. De-Shalit	400
MEASUREMENTS OF THE CIRCULAR POLARIZATION OF EXTERNAL BREMSSTRAHLUNG PRODUCED BY β -PARTICLES IN THE DECAY OF P^{32} , Y^{90} AND Rh^{106} by S. G. Cohen, R. Wiener, M. Wald and M. Schmorak	404
POLARIZATION OF ELECTRONS EMITTED BY Co^{60} by H. Bienlein, R. Fleischmann and H. Wegener	406
β^+ -ASYMMETRIES FOR POLARIZED Co^{58} AND Mn^{52} NUCLEI by H. Postma, W. J. Huiskamp, A. R. Miedema, M. J. Steenland, H. A. Tolhoek and C. J. Gorter	408
β - γ -CIRCULAR POLARIZATION CORRELATION by H. Schopper	410
SUMMARY ON EXPERIMENTS ON THE β -DECAY INTERACTIONS by K. Alder	414
GENERAL REMARKS ON PARITY NON-CONSERVATION by W. Pauli	416
REMARKS ON LEPTON CONSERVATION AND TWO COMPONENT THEORY by D. L. Pursey	417
<i>Discussion</i> (Lee)	418
BETA-GAMMA ANGULAR CORRELATION MEASUREMENTS by R. M. Steffen	419
THE MEASUREMENT OF BETA SPECTRA by L. M. Langer	437
<i>Discussion</i> (Goldring)	454
THE ANALYSIS OF THE SPECTRA OF Ho^{166} AND Pr^{144} by G. Alaga	455
THE DISINTEGRATION OF 17-MIN. Pr^{144} by D. A. Bromley	457
POST-CONFERENCE SUMMARY OF RECENT DEVELOPMENTS IN β -DECAY (Editor's Note)	461

SESSION VII

EXTRA-NUCLEAR EFFECTS ON ANGULAR CORRELATION

	Page
INFLUENCE DES CHAMPS EXTRANUCLEAIRES SUR LES CORRELATIONS ANGULAIRES by A. Abragam	467
THE DETERMINATION OF MAGNETIC AND ELECTRIC MOMENTS OF EXCITED NUCLEAR STATES by H. Frauenfelder	472
<i>Discussion</i> (Abragam, Bohr)	475
MEASUREMENTS OF g -FACTORS OF 2^+ ROTATIONAL LEVELS by G. Goldring	476
<i>Discussion</i> (Deutsch, Alder, Low, Goldring).	477
ATTENUATION OF THE ANGULAR CORRELATION OF γ -RAY CASCADES IN SOME RARE EARTH NUCLEI BY EXTRA NUCLEAR FIELDS by S. Ofer and S. G. Cohen	479

SESSION VIII

INSTRUMENTS OF NUCLEAR SPECTROSCOPY

APPLICATIONS OF MAGNETIC SPECTROSCOPY AND COINCIDENCE TECHNIQUES by T. R. Gerholm	483
<i>Discussion</i> (Segal, Goldring, Day)	501
AIR CORED $\pi\sqrt{2}$ BETA RAY SPECTROMETER by D. A. Bromley	503
ON THE POSSIBILITY OF MEASURING PAIR SPECTRA BY THE TIME OF FLIGHT METHOD BY INTRODUCING TROCHOIDAL ORBITS by K. G. Malmfors	506
GAMMA RAY SPECTROSCOPY BY MEANS OF BENT CRYSTAL DIFFRACTION by J. W. M. Dumond	509
GAMMA RAY CRYSTAL SPECTROMETER by D. A. Bromley	534
<i>Discussion</i> (Dumond, Bromley)	536
A COMPLEMENTARY SYSTEM OF SPECTROMETERS by M. Mladjenovič GAS SCINTILLATION COUNTERS by P. Avivi and M. Ben-Porat	540
AN INSTRUMENT FOR MEASURING SHORT LIFE TIMES by A. E. Blaugrund.	542

SESSION IX

THE MEASUREMENT OF VERY SHORT NUCLEAR LIFE TIMES

THE MEASUREMENT OF SHORT LIFETIMES FOR γ -TRANSI- TIONS by S. Devons	547
NUCLEAR RESONANCE FLUORESCENCE by F. R. Metzger	560
<i>Discussion</i> (Devons)	569
THE MEASUREMENT OF THE LIFE-TIME OF EXCITED STATES PRODUCED BY ALPHA-DECAY by S. G. Cohen	571

	Page
LIFETIME OF THE 85 keV STATE OF Ra ²²⁴ by J. G. Siekman en H. de Waard	584
NUCLEAR RESONANT ABSORPTION OF GAMMA-RAYS IN Si ²⁸ AND P ³¹ by P. B. Smith	587
DAILY BULLETINS OF THE CONFERENCE AND IRREPRODUCIBLE RESULTS by H. J. Lipkin	591
AUTHOR INDEX	613