

Contents

Part 1 Weak and Electromagnetic Nuclear Properties and Excitations

1.1 Nuclei at Low Excitation

Nuclear Moments: A Test of the Shell Model?	
<i>P.W.M. Glaudemans</i>	2
Nuclear Isoscalar Magnetic Moments and Gauge Invariance	
<i>W. Bentz</i>	10
Shell-Model Analyses of Weak and Electromagnetic Data: The Interplay of Many-Body and Single-Nucleonic Features	
<i>B.H. Wildenthal</i>	18
Global Set of Quadrupole Deformation Parameters for Even-Even Nuclei	
<i>S. Raman and C.W. Nestor, Jr.</i>	25
Core Polarization for Magnetic Transitions ($\lambda=1,2,4$)	
<i>W. Andrejtscheff, Ch. Stoyanov, and A.I. Vdovin</i>	31
Evidence for Three Microscopically Different Kinds of E1 Transitions in Lead-Region Nuclei	
<i>T. Lönnroth</i>	39
Electromagnetic Transitions in Octupolly Deformed Nuclei	
<i>K. Böhning, Z. Patyk, A. Sobiczewski, and P. Rozmej</i>	42
Observation of Full Sets of Coexisting Intruder Excitations in the N=58 Isotones and Isotopes of Zr: Evidence for Alpha Correlated Excitations?	
<i>R.A. Meyer et al.</i>	45
On the β -Transition of ^{205}Tl to ^{205}Pb	
<i>E. Braun and I. Talmi</i>	47
Study of the 1S Component of the Internal Bremsstrahlung Accompanying the (1u)-Forbidden Electron-Capture Decay of ^{41}Ca	
<i>P. Hornshøj and M. Pfützner</i>	49

Continuity-Equation Constraint and the Non-Uniqueness of the Vector Potential Decompositions <i>M. Gmitro, J. Kvasil, and J. Řízek</i>	52
Nuclear Clustering Effects in Colliding N=Z and N \neq Z Nuclei <i>R.K. Gupta, S.S. Malik, and R. Sultana</i>	55
Cluster Distortion Effects in Electron Scattering from ^6Li <i>A.T. Kruppa</i>	57
The Effect of Hidden Colour on the Helium Isotopes <i>A. Abbas</i>	59
^4He D-State Effects in the $^2\text{H}(\text{d}, \gamma)^4\text{He}$ Reaction at Low Energies <i>A. Arriaga, A.M. Eiró, and F.D. Santos</i>	61
Electromagnetic Structure of the Deuteron in the Skyrme Model <i>E.M. Nyman and D.O. Riska</i>	63
The Electromagnetic Radii of the Deuteron <i>L. Črepinská and H.F.K. Zingl</i>	65
Asymmetry and Angular Distribution of Deuteron Photodisintegration in the 20–60 MeV Range <i>M.L. Rustgi, L.N. Pandey, and A. Kassaei</i>	67
Measurement of the Natural Widths of Thulium Atomic Levels in the Decay of ^{169}Yb <i>V.N. Pokrovskii et al.</i>	69
Measurements of Proton Strength Functions and Comparison with Theory <i>E. Arai and Y. Ozawa</i>	71
Low Energy Photofission of Actinides <i>W. Wilke et al.</i>	74
Effects of the Vacuum-Polarization on Sub-Coulomb ^{12}C – ^{12}C -Scattering <i>D. Vetterli et al.</i>	77

1.2 Nuclei in Highly Excited States

1.2.1 High Spin States

Electromagnetic Properties of Nuclei at High Spins <i>G.A. Leander</i>	79
Shape Coexistence and Discrete Superdeformed States up to 60h in ^{152}Dy <i>J.F. Sharpey-Schafer</i>	88

Evolution of Nuclear Structure with Spin and Temperature <i>T.L. Khoo</i>	98
Nuclear Rotation in the $N \cong Z \cong 36$ Region <i>K.P. Lieb</i>	106
Cooling of Hot Rotating Nuclei by Electric and Magnetic Dipole Radiation <i>H.P. Morsch et al.</i>	111
Energy Correlations of γ -Rays from Superdeformed States in $Z=66$ and 68 Isotopes; Multipolarities in ^{152}Dy <i>M.J.A. de Voigt et al.</i>	116
High Spin States Around $A \sim 150$ <i>A. Piepke et al.</i>	122
The Nucleus ^{136}Sm and the Transition to a Strong Deformed Region at $N=74-76$ <i>F. Soramel, S. Lunardi, W. Meczynski, and M. Morando</i>	127
Excitation of Stretched Particle-Hole States in Closed Shell Nuclei <i>A. Yokoyama and H. Horie</i>	129

1.2.2 Giant Resonances and Sum Rules

Photon Decay of Giant Resonances <i>F.E. Bertrand, J.R. Beene, and M.L. Halbert</i>	132
Coincidence Electron Scattering ($e, e'c$) in the Giant Resonance Region of ^{28}Si <i>Th. Kihm et al.</i>	141
($e, e'f$)-Coincidence Experiments on Uranium Isotopes <i>Th. Weber et al.</i>	144
The Isovector E2 Resonance in ^{90}Y Observed in Neutron Radiative Capture <i>L. Nilsson et al.</i>	146
Giant Dipole Resonances in Excited Nuclei <i>K.A. Snover</i>	148
Giant Resonances on Excited States in Deformed Nuclei <i>V. Kitipova</i>	159
Direct-Semidirect Proton Capture in the GDR Region <i>T. Rzaca-Urban et al.</i>	165
Dispersion Relation Analysis of Photonuclear Data <i>J. Ahrens, L.S. Ferreira, and W. Weise</i>	167

1.3 Exotic Nuclei and Beta Decay far from Stability

Search for Superheavy Elements – A Status Report <i>G. Herrmann</i>	170
Heavy Elements – Experiments on Synthesis and Decay <i>S. Hofmann et al.</i>	179
What is the Source of the Narrow Positron Peaks Observed in Superheavy Collision Systems? <i>J. Schwepppe and J.S. Greenberg</i>	186
New Information on Nuclear Structure in the Cd-In-Sn Region from Laser Spectroscopy and the Question of Core Polarization Contribution to Nuclear Radii <i>E.W. Otten</i>	200
Beta Decay of Neutron-Rich Transuranic Nuclei <i>R.W. Hoff</i>	207
Studies of Heavy-Ion Produced Proton-Rich and Neutron-Rich Nuclei <i>O. Klepper</i>	213
Study of Properties of Nuclei far from Stability at GANIL <i>A.C. Mueller</i>	219
Beta Decay of Twelve Light Neutron-Rich Isotopes from ^{17}C to ^{40}S <i>J.P. Dufour et al.</i>	225
Beta Decay far from Stability and the Decay Heat of Nuclear Reactors <i>H.V. Klapdor, J. Metzinger, and K. Grotz</i>	230
Gamow-Teller Resonance in β^+ -Decay of Heavy Nuclei and Delayed Proton Emission <i>G.D. Alkhazov et al.</i>	239
GT Beta Decay of ^{29}Na – Comparison with Shell Model Predictions <i>P. Baumann et al.</i>	242
The Renormalization of the Axial-Vector Strength in Nuclei: Experiments on Superallowed Beta-Decay <i>B. Jonson et al.</i>	244
The $\pi g_{9/2} \rightarrow \nu g_{7/2}$ Gamow-Teller Beta Decay of Even Nuclei Near ^{100}Sn <i>J. Dobaczewski et al.</i>	248
Giant GT $^+$ Excitations of N=82 Nuclei Populated in β^+ -Decay <i>P. Kleinheinz</i>	250
Experimental and Shell-Model Study of the Beta Decay of ^{43}Ti <i>J. Honkanen et al.</i>	253

Energies for Superallowed ft-Values: $^{42}\text{Sc}(\beta^+) \text{ }^{42}\text{Ca}$	255
<i>P.H. Barker and V.T. Kirk</i>	
Discovery of New Fission Product Activities in the A=110–118 Mass Region	
<i>P. Taskinen, J. Honkanen, J. Åystö, P. Jauho, M. Yoshii, and J. Årje</i>	258
1.4 Spin-Isospin Excitations in Nuclei	
Δ-Excitations in Nuclei	
<i>C. Gaarde</i>	260
Spin-Isospin Excitation by the (p, p') Reaction	
<i>N. Marty</i>	268
Universal Gamow-Teller Quenching in (n, p), (\vec{p}, \vec{p}') and (p, n) Reactions	
<i>O. Häusser</i>	273
Spin-Isospin Excitations in Nuclei by the (p, n) Reaction	
<i>R. Madey, B.D. Anderson, B.S. Flanders, and J.W. Watson</i>	280
Microscopic Description of (p, n) Reactions at Intermediate Energies	
<i>S.N. Ershov, F.A. Gareev, N.I. Pyatov, and S.A. Fayans</i>	287
Charge-Exchange Resonances in Deformed Nuclei	
<i>L.A. Malov, V.G. Soloviev, and A.V. Sushkov</i>	291
Quenching of Gamow-Teller Strength and a Microscopic Derivation of the Effective Δ_{33} -Nucleon Interaction	
<i>S. Krewald</i>	295
Does the Delta Quench Gamow-Teller Strength in (p, n)- and (\vec{p}, \vec{p}')-Reactions?	
<i>F. Osterfeld, A. Schulte, T. Udagawa, and M. Yabe</i>	301
Symmetry Violation and Interplay between Giant Resonances and Background in Finite Nuclei	
<i>I. Rotter</i>	308
Properties of a New Magnetic Dipole Mode Discovered in Low Energy Electron Scattering	
<i>D. Bohle et al.</i>	311
Mixed-Symmetry States in Proton-Neutron Systems	
<i>K. Heyde</i>	321
Proton-Neutron Symmetry among Bosons	
<i>P. von Brentano</i>	326
F-Spin and Collective M1 Transitions	
<i>A. Gelberg</i>	332

Microscopic Calculations for Low-Lying M1-Collective States in Deformed Nuclei <i>N.I. Pyatov and S.I. Gabrakov</i>	337
Low-Frequency Neutron-Proton Vibrations <i>A. Faessler, R. Nojarov, and Z. Bochnacki</i>	339
The Convection Current for the $0^+ \rightarrow 1^+$ Excitations in the Even-Even $f_{7/2}$ Shell Nuclei <i>T. Oda and K. Moto</i>	341
Gamow-Teller Strength from Spin-Isospin Saturated Nuclei <i>B. Desplanques and S. Noguera</i>	344
Calculation of the Gamow-Teller Resonance in Nuclear β -Decay: The Cases ^{34}Ar and ^{35}Ar <i>W. Knüpfer, B. Metsch, W. Müller, and A. Richter</i>	347
Nuclear Spin-Isospin Excitations Studied by Photopion Productions <i>K. Shoda and A. Kagaya</i>	350
$^{6,7}\text{Li}(\gamma, \pi^+)$ $^{6,7}\text{He}$ Reactions for Highly Excited Resonances in $^{6,7}\text{He}$ <i>K. Shoda et al.</i>	352
<hr/>	
Part 2 Electroweak Interactions in Nuclei and Subnucleonic Structure	
<hr/>	
The Experimental Status of the EMC Effect <i>K. Rith</i>	356
QCD and Fermi Gas Model Interpretations of the E. M. C. Effect <i>F.E. Close</i>	365
Massive Lepton Pair Production – the Drell-Yan Process – with Nuclear Targets <i>E.L. Berger</i>	374
The EMC Effect and the Swelling of Nucleons in Nuclei <i>M. Ericson</i>	382
The Colour Conductivity Model and the Shadow Phenomenon in Nuclei <i>O. Nachtmann</i>	393
Nuclear Effects in Deep-Inelastic Lepton-Nucleus Scattering <i>S. Shlomo, S.V. Akulinichev, S.A. Kulagin, and G.M. Vagradov</i>	400
Electromagnetic Response in Nuclei in Terms of the Quark Structure <i>C.M. Shakin</i>	404
Many Quark Effects in Electron-Nucleus Scattering <i>P.J. Mulders</i>	410

Medium Effects on Nucleon Size <i>I. Sick</i>	415
Spin-Isospin Response in Nuclei <i>H. Toki</i>	423
On the Longitudinal Charge Response in the Quasielastic Peak Region <i>U. Stroth, R.W. Hasse, and P. Schuck</i>	427
Semi-Classical Calculation of the Nuclear Spin-Isospin Response Functions <i>G. Chanfray</i>	431
Nucleon Form Factors from Elastic Scattering of Polarized Leptons (e, μ, τ) from Polarized Nucleons <i>R. Tegen</i>	435
Y-Scaling, FSI and the Choice of a Scaling Variable <i>A.S. Rinat</i>	441
The Inclusive $(\gamma, \pi^+ \pi^-)$ Reaction in Nuclei as a Test of the Pion Dispersion Relation in Nuclear Matter <i>E. Oset and M.J. Vicente-Vacas</i>	444

Part 3 Status and Test of Electroweak Theories and GUT's

3.1 Status of Electroweak Theory

Status of Electroweak Theory for Heavy Quark Decays and CP Violation <i>L.-L. Chau</i>	450
Experimental Determination of the Kobayashi-Maskawa Matrix Elements <i>K.R. Schubert</i>	471
Massive Neutrinos and Gauge Theories <i>S.T. Petcov</i>	481
Constraints on the Left-Right Symmetric Models of Weak Interactions <i>R.N. Mohapatra</i>	493
Determination of the Electro-Weak Mixing Angle in Neutrino Interactions <i>U. Dore</i>	505
Neutrinoless Double β -Decay and Lepton Flavor Violation <i>G.K. Leontaris and J.D. Vergados</i>	510

3.2 Electroweak Interactions and Symmetries in Baryons, Nuclei and Atoms

3.2.1 Nuclear Beta Decay and Weak Coupling Constants

The Beta Decay of the Neutron

<i>D. Dubbers</i>	516
-----------------------------	-----

The Neutron Lifetime

<i>J. Byrne</i>	523
---------------------------	-----

Constraints on General $SU(2)_L \times SU(2)_R \times U(1)$ Electroweak Models from Nuclear Beta Decay

<i>P. Herczeg</i>	528
-----------------------------	-----

Search for Anomalous "V+A" Currents in Nuclear Beta Decay

<i>A.S. Carnoy, J. Deutsch, T.A. Girard, and R. Prieels</i>	534
---	-----

Weak Interaction Studies of Oriented Nuclei Far from Stability

<i>L. Vanneste et al.</i>	540
-------------------------------------	-----

Beta-Decay Asymmetry Measurements of the Mirror Nuclei

<i>N. Severijns et al.</i>	543
--------------------------------------	-----

Recent Calculations of Isospin-Mixing Corrections to the Fermi Matrix Element in Superallowed β -Decay and the Determination of the Weak Vector Coupling Constant

<i>W.E. Ormand and B.A. Brown</i>	545
---	-----

Axial-Vector Weak Coupling Constant g_A and Quark Confinement in Nucleons

<i>R. Tegen</i>	548
---------------------------	-----

Exchange Currents and Configuration Mixing Effects in the $^{16}\text{O}(0^+)$ - $^{16}\text{N}(0^-)$ Transitions

<i>S. Nozawa and K. Kubodera</i>	553
--	-----

Measurements of the Longitudinal Electron Polarization in Nuclear Beta-Decay

<i>R. Gauder et al.</i>	557
-----------------------------------	-----

A Universal Source of Polarized Cold and Ultracold Neutrons at the LNPI WWR-M Reactor

<i>A.P. Serebrov</i>	559
--------------------------------	-----

3.2.2 Hyperons and Hypernuclei

Semileptonic Hyperon Decays

<i>H.W. Siebert</i>	562
-------------------------------	-----

Electroweak Properties of the Baryons in QCD

<i>J. Pasupathy</i>	568
-------------------------------	-----

The Weak Decay of Hypernuclei <i>G.B. Franklin</i>	571
Theoretical Aspects of the Weak Decay of Hypernuclei <i>J. Dubach</i>	576
Heavy Hypernuclei <i>J.P. Bocquet et al.</i>	583
Electromagnetic Transitions in Hypernuclei <i>R.E. Chrien</i>	587
3.2.3 Parity and CP Violation, Charge Symmetry	
Nuclear Probes of Fundamental Symmetries <i>E.G. Adelberger</i>	592
Parity Violation in Atoms <i>C.-A. Piketty</i>	603
Charge Symmetry and Charge Independence <i>K.K. Seth</i>	619
Electric Dipole Moment of ${}^3\text{He}$ <i>Y. Avishai and M. Fabre de la Ripelle</i>	630
A Proposal for a High Sensitivity Search for T-Violation in Slow Neutron Resonances <i>C.D. Bowman, J.D. Bowman, and V.W. Yuan</i>	633
P-Violating Effects in the Integral Gamma-Ray Spectrum of $n\gamma$ -Reactions on Nuclei <i>V.A. Nazarenko</i>	635
Some Macroscopic Effects of P- and T-Violation in Atoms <i>A.N. Moskalev</i>	638
Parity Nonconserving NN Interaction in $SU(3)_C \times SU(2)_L \times U(1)$ Theory <i>V.M. Dubovik and S.V. Zenkin</i>	640
Measurement of the Parity Violation in Quasi-Elastic Electroweak Electron-Scattering from ${}^9\text{Be}$ <i>W. Achenbach et al.</i>	642
Strong Interaction Effects in Parity Violation in p-p Elastic Scattering <i>G. Roy, J. Birchall, and W.T.H. van Oers</i>	646
Progress Report on an Experiment to Measure $\Delta I=0$ Parity Mixing in ${}^{14}\text{N}$ <i>H.E. Swanson et al.</i>	648

3.3 Lepton Number Violation and Neutrino Mass

3.3.1 Double Beta Decay

Double Beta Decay and Nuclear Structure <i>K. Grotz and H.V. Klapdor</i>	650
Neutrinoless Double Beta Decay and a Limit on the Right-Handed Leptonic Current <i>T. Tomoda</i>	663
Nuclear Matrix Elements of $^{48}\text{Ca}(0_1^+) \rightarrow ^{48}\text{Ti}(0_1^+)$ Double Beta Decay <i>K. Muto</i>	668
Double Beta Decay: Experiments and New Techniques <i>E. Bellotti</i>	670
Ultralow Background Searches for $\beta\beta$ -Decay, Cold Dark Matter and Solar Axions <i>F.T. Avignone III et al.</i>	676
Limits on Lepton Number Non-Conservation Studied by Double Beta Decays of ^{76}Ge and ^{100}Mo <i>H. Ejiri et al.</i>	681
New Limits on Neutrino Masses and Right-Handed Currents from Double Beta Decay <i>D.O. Caldwell et al.</i>	686
An Experimental Search for Double Beta Decay in ^{82}Se <i>S.R. Elliott, A.A. Hahn, and M.K. Moe</i>	692
Neutrinoless Double Beta Decay of ^{76}Ge . Preliminary Results of an Experiment in the Frejus Tunnel <i>A. Morales et al.</i>	696
Searching for $\beta\beta$ Decay of ^{150}Nd . Next Step <i>A.A. Klimenko et al.</i>	701
New Possibilities in a Double Beta Decay Experiment Using Enriched ^{76}Ge Inside of an Active Si(Li) Shielding <i>L.A. Popeko et al.</i>	703

3.3.2 Solar Neutrinos

Solar Neutrinos: Theory <i>J.N. Bahcall</i>	705
Neutrino Oscillations in Matter <i>S.P. Mikheyev and A.Yu. Smirnov</i>	710

The Signal from the Gallium Solar Neutrino Detector: Implications for Neutrino Oscillations and Solar Models <i>W. Hampel</i>	718
The Effective Interaction Dependence of the ${}^8\text{B}$ Neutrino Capture Rate of the Ga Solar Neutrino Detector <i>T. Oda and K. Muto</i>	723
Microscopic Calculation of Neutrino Capture Rates in ${}^{69,71}\text{Ga}$ and the Detection of Solar and Galactic Neutrinos <i>H.V. Klapdor, K. Grotz, and J. Metzinger</i>	727
Gamow-Teller Strength Functions via (p, n) and the Ga Solar Neutrino Detector <i>E. Sugarbaker</i>	733
The Sudbury D_2O Neutrino Detector <i>E.D. Earle et al.</i>	737
Low Energy Neutrino Detection with the Mont Blanc LSD Experiment <i>M. Aglietta et al.</i>	741
The Solar Neutrino Problem as a Probe for Nuclear Astrophysics <i>H.J. Haubold and A.M. Mathai</i>	745
Exchange Currents in the Neutrino-Deuteron Reaction and the Solar Neutrino Problem <i>S. Nozawa, Y. Kohyama, and K. Kubodera</i>	747

3.3.3 Reactor Neutrino Oscillation Experiments

Neutrino Oscillation Experiments at Nuclear Power Reactors <i>V. Zacek</i>	750
The Bugey Neutrino Oscillation Experiment. Status and a New Neutrino Detector <i>D.-H. Koang</i>	755
Reactor Core Antineutrino Spectra <i>K. Schreckenbach et al.</i>	759
Absolute Measurement of the Sum Beta-Spectra of all Fission Products from ${}^{235}\text{U}(\text{n}_{\text{th}}, \text{f})$ and ${}^{239}\text{Pu}(\text{n}_{\text{th}}, \text{f})$ <i>U. Keyser and F. Münnich</i>	764
Reactor Antineutrinos and Underground Detectors <i>P.O. Lagage</i>	766
Present Knowledge of the Lepton Mixing Matrix from Neutrino Oscillation Experiments <i>K. Kleinknecht</i>	770

Mixing Among Three States: A Practical Approximation and Its
Application to Neutrino Oscillations

T. Sauerland 776

3.3.4 Tritium Decay and Electron Capture

An Upper Limit for the Electron Antineutrino Mass

W. Kündig et al. 778

A Limit on the $\bar{\nu}_e$ Mass in Free Molecular Tritium Beta Decay

T.J. Bowles et al. 782

Measurement of the Mass of the Electron Neutrino Using Electron
Capture in ^{163}Ho

S. Yasumi et al. 786

3.4 Muon Physics

3.4.1 Muon Decay and Lepton-Flavor Conservation

Study of Rare and Forbidden μ - and π -Decays

R. Engfer 789

Search for Muon-to-Electron Conversion in Titanium

P. Depommier et al. 798

New Results for Rare Muon Decays

R.E. Mischke et al. 803

Measurement and Analysis of the Rare Muon Decay

$\mu^+ \rightarrow e^+ \nu_e \bar{\nu}_\mu e^-$

U. Bellgardt et al. 809

Complete Determination of the Charged Leptonic Weak Interaction in
Muon Decay

W. Fetscher, H.-J. Gerber, and K.F. Johnson 812

3.4.2 Muon Capture and μ -Atoms

Muon Capture in Nuclei and Determination of Weak Coupling

Constants

H. Ohtsubo 816

Radiative Muon Capture and the Induced Pseudoscalar Coupling in
Nuclei

M. Döbeli et al. 822

Possibilities to Measure Electroweak Effects in Muonic Atoms

L.M. Simons 831

Heavy Muonic Atoms and Muon Capture <i>P. David</i>	833
A Measurement of the Muon Capture Rate in Liquid Deuterium by the Lifetime Technique <i>J. Martino</i>	839
Pion Exchange Current Effects in $\nu_\mu + d \rightarrow \mu^- + p + p$ <i>S.K. Singh and H. Arenhövel</i>	841
Search for the Lambshift in Muonic Helium at Low Helium Pressures <i>H.P. von Arn et al.</i>	844

3.5 GUT's, SUSY's, Superstrings

3.5.1 Further Basic Experiments for GUT's

Nucleon Decay Experiments <i>H. Meyer</i>	846
Neutron-Antineutron Oscillation Experiments <i>M. Baldo-Ceolin</i>	855
Search for a Neutron Electric Dipole Moment <i>N.F. Ramsey</i>	861
An Experimental Search for the Neutron Electric Dipole Moment <i>V.M. Lobashev</i>	866
Search for Short-Lived Axions Emitted from Neutron Capture on Protons <i>S.J. Freedman, M. Arnold, J. Doehner, J. Last, and D. Dubbers</i> . . .	871
Search for Short-Lived Axions in a Nuclear Isoscalar Transition <i>F.W.N. de Boer et al.</i>	875

3.5.2 Theory of GUT's, SUSY's, Superstrings

The Present Status of Proton Decay and Baryon Number Nonconservation <i>P. Langacker</i>	879
Quasi Standard Model Physics <i>R.D. Peccei</i>	891
Hierarchy and Mass Spectrum from Minimal Supergravity <i>N. Dragon</i>	901
Superstrings <i>J.-P. Derendinger</i>	907

Baryon and Lepton Number Violation in Superstring Motivated Models <i>Q. Shafi</i>	919
Expectations for Neutrino Mass and Baryon Number Violation in Superstring Models <i>J.W.F. Valle</i>	927

Part 4 Weak Interaction in Astrophysics and Cosmology

4.1 Weak Interaction in Astrophysics

Supernovae and High Density Nuclear Matter <i>S. Kahana</i>	938
Electron Capture in Stellar Collapse <i>J. Wambach</i>	950
Neutron Star Formation and the Weak Interaction <i>A. Burrows</i>	960
Baryon and Lepton Number Violation in Astrophysics <i>E.W. Kolb</i>	969
The Stellar Beta-Decay Rate of ^{79}Se <i>N. Klay and F. Käppeler</i>	977
Coulomb Dissociation as a Source of Information on Radiative Capture Processes of Astrophysical Interest <i>G. Baur, C.A. Bertulani, and H. Rebel</i>	980
Competition of Neutron Capture and Beta Decay at the ^{85}Kr and ^{151}Sm Branchings, a Means to Estimate the s-Process Pulse Conditions <i>H. Beer</i>	982
Neutron Capture Cross Sections for ^{86}Sr and ^{87}Sr at Stellar Temperatures <i>R.W. Bauer et al.</i>	984
Laboratory Determination of the Half-Life of ^{187}Re , a Nuclide of Cosmological Interest <i>M. Lindner et al.</i>	986
Interpretation of the Solar $^{48}\text{Ca}/^{46}\text{Ca}$ Abundance Ratio and the Correlated Ca-Ti-Cr Isotopic Anomalies in Inclusions of the Allende Meteorite <i>W. Hillebrandt, K.-L. Kratz, F.-K. Thielemann, and W. Ziegert</i>	987

4.2 Evolution and Structure of the Universe

The Inflationary Universe: Progress and Problems <i>R.H. Brandenberger</i>	991
The Age of the Universe in Inflationary Cosmology <i>H.-J. Blome</i>	1005
Constraints on the Age of the Universe from Globular Clusters and the Cosmic Expansion Rate <i>G.A. Tammann</i>	1016
Evidence for a Nonvanishing Energy Density of the Vacuum or Cosmological Constant <i>H.V. Klapdor and K. Grotz</i>	1026
Weak Interaction and the Large Scale Structure of the Universe <i>D.N. Schramm</i>	1032

Part 5 Summary

Summary <i>A. Faessler</i>	1046
---	------

Part 6 Appendix

Large Scale Computing in Theoretical Physics: Example QCD <i>K. Schilling</i>	1072
Remarks on the History of the University of Heidelberg <i>G. zu Putlitz</i>	1087
Six Hundred Years of Physics at Heidelberg <i>P. Brix</i>	1091
List of Participants	1103
Index of Contributors	1107