

CONTENTS

Topics

1. Gamow-Teller Transitions Studied in RCNP High Resolution (${}^3\text{He}, t$) Measurements and their Isospin Mirror Transitions in β -decay Studies
Y. Fujita, T. Adachi and H. Fujita for the RCNP high resolution (${}^3\text{He}, t$) collaboration
B. Rubio, F. Molina and W. Gelletly for the Valencia, Surrey, Osaka, Bordeaux, Caen, GANIL, GSI, Istanbul, Legnaro, Leuven, Lund, Madrid, New Delhi, Orsay, Santiago β -decay collaboration
2. Baryons and baryonic matter from "Skyrmions" in holographic QCD
Kanabu Nawa, Hideo Saganuma, Atsushi Hosaka and Toru Kojo

I EXPERIMENTAL NUCLEAR PHYSICS

Nuclear Reactions and Structure

1. Determination of the proton separation energy of ${}^{93}\text{Rh}$ from mass measurements
J. Fallis, J. A. Clark, K. S. Sharma, G. Savard, F. Buchinger, S. Caldwell, J. E. Crawford, C. M. Deibel, J. L. Fisker, S. Gulick, A. A. Hecht, D. Lascar, J. K. P. Lee, A. F. Levand, G. Li, B. F. Lundgren, A. Parikh, S. Russell, M. Scholte-van de Vorst, N. D. Scielzo, R. E. Segel, H. Sharma, S. Sinha, M. Sternberg, T. Sun, I. Tanihata, J. Van Scheelt, J. C. Wang, Y. Wang, C. Wrede, and Z. Zhou
2. Calibrations for the absolute value of the cross section in the elastic scattering of 300 MeV protons
N. Fujita, H. Sakaguchi, Y. Maeda, A. Nonaka, H. Okamura, A. Tamii, J. Zenihiro, H. Matsubara, D. Ishikawa, T. Terashima, and Y. Yasuda
3. Measurement of $\text{H}(d, pp)\text{n}$ cross sections at $E_d = 26$ MeV in the off-plane star configurations
Y. Maeda, H. Shimoda, K. Sagara, Y. Eguchi, N. Fujita, K. Hatanaka, D. Ishikawa, S. Kuroita, A. Nonaka, H. Okamura, T. Sueta, A. Tamii, K. Yashima
4. Lifetimes of states in ${}^{19}\text{Ne}$ above the ${}^{15}\text{O} + \alpha$ breakup threshold
S. Mythili, B. Davids, T. K. Alexander, G. C. Ball, M. Chicoine, R. S. Chakrawarthy, R. Churchman, J. S. Forster, S. Gujrathi, G. Hackman, D. Howell, R. Kanungo, J. R. Leslie, E. Padilla, C. J. Pearson, C. Ruiz, G. Ruprecht, M. A. Schumaker, I. Tanihata, C. Vockenhuber, P. Walden, and S. Yen
5. An evidence for α cluster condensaton in the 0^+ state at Ex-7.65 MeV in ${}^{12}\text{C}$ via (p, p') reaction at 300MeV

*A. Okamaoto, T. Yamagata, H. Akimune, M. Fujiwara, K. Fushimi,
M.B. Greenfield, K. Hara, K. Y. Hara, H. Hashimoto, R. Hayami,
H. Hirabayashi, K. Kwase, M. Kinoshita, K. Nakanishi, S. Nakayama,
M. Tanaka, H. Utsunomiya, N. Warashina and M. Yosoi*

**6. Feasibility study of the (d, pp) reaction in inverse kinematics as a possible probe
for $B(GT^+)$ strengths in neutron-rich nuclei**

*H. Okamura, D. Ishikawa, H. Iwasaki, H. Matsubara, H.J. Ong, H. Otsu,
K. Sekiguchi, D. Suzuki, T. Suzuki, A. Tamii, and I. Tanihata*

7. Anomalous E2 Strengths in $^{16,18}C$

*H. J. Ong, N. Imai, D. Suzuki, H. Iwasaki, H. Sakurai, T. K. Onishi,
M. K. Suzuki, S. Ota, S. Takeuchi, T. Nakao, Y. Togano, Y. Kondo, N. Aoi,
H. Baba, S. Bishop, Y. Ichikawa, M. Ishihara, T. Kubo, K. Kurita,
T. Motobayashi, T. Nakamura, T. Okumura and Y. Yanagisawa*

**8. Development of ^{17}N Radioactive Isotope Beam for In-Beam Gamma-Ray
Spectroscopy Using Fusion Reaction**

*A. Takashima, M. Kazato, M. Suga, K. Kura, K. Tajiri, T. Hori, T. Masue,
A. Odahara, T. Shimoda, T. Suzuki1, Y. Gono, Y. Wakabayashi and E. Ideguchi*

9. Measurement of two-halo neutron transfer reaction $p(^{11}\text{Li}, ^9\text{Li})t$ at 3A MeV

*I. Tanihata, M. Alcorta, D. Bandyopadhyay, R. Bieri, L. Buchmann, B. Davids,
N. Galinski, D. Howell, W. Mills, R. Openshaw, E. Padilla-Rodal, G. Ruprecht,
G. Sheffer, A. C. Shotter, S. Mythili, M. Trinczek, P. Walden, H. Savajols,
T. Roger, M. Caamano, W. Mittig, P. Roussel-Chomaz, R. Kanungo,
A. Gallant, M. Notani, G. Savard, I. J. Thompson*

10. Study of medium effect on NN interaction by using (p, pn) reactions

*Y. Yamada, T. Noro, T. Imamura, M. Dozono, Y. Eguchi, N. Fujita,
K. Hatanaka, D. Ishikawa, M. Itoh, S. Kuroita, Y. Maeda, H. Matsubara,
Y. Matsuda, A. Nonaka, H. Okamura, K. Sagara, H. Sakaguchi, Y. Sakemi,
A. Tamii, T. Wakasa, K. Yashima, Y. Yasuda, H. P. Yoshida and J. Zenihiro*

**11. Measurement of the reaction cross section of ^{18}C and observations of fragments
from ^{17}C and ^{18}C at 80A MeV**

*A. Ozawa, D. Q. Fang, M. Fukuda, N. Iwasa, T. Izumikawa, H. Jeppesen,
R. Kanungo, R. Koyama, T. Ohnishi, T. Ohtsubo, W. Shinozaki, T. Suda,
T. Suzuki, M. Takahashi, I. Tanihata, C. Wu and Y. Yamaguchi*

Quark-Lepton Nuclear Physics

1. The first production of polarized Hydrogen-Deuteride(HD) target at RCNP
T. Ohta, S. Bouchigny, J.P. Didelez, M. Fujiwara, K. Fukuda, H. Kohri, T. Hotta, T. Kunimatsu, C. Morisaki, G. Rouille, M. Tanaka, K. Ueda, M. Uraki, M. Utsuro, S.Y. Wang and M. Yosoi.
2. The first measurement of relaxation time of polarized Hydrogen-Deuteride (HD) target at RCNP
S.Y. Wang, S. Bouchigny, J.P. Didelez, M. Fujiwara, K. Fukuda, T. Hotta, H. Kohri, T. Kunimatsu, C. Morisaki, T. Ohta, G. Rouille, M. Tanaka, M. Uraki, M. Utsuro and M. Yosoi

Nuclear Astrophysics

1. PICO-LON project for dark matter and neutrino studies
K.Fushimi, Y.Kameda, K.Harada, S.Nakayama, H.Ejiri, T.Shima, K.Yasuda, S.Umehara, R.Hazama
2. Double Beta Decay Study of ^{48}Ca by CANDLES at Kamioka
I.Ogawa, T.Kishimoto, S.Umehara, G.Ito, K.Yasuda, M.Wada, K.Matsuoka, M.Nomachi, K.Fushimi, R. Hazama, H. Ohsumi, K.Okada, Y.Tamegawa and S.Yoshida
3. CANDLES for Study of Double Beta Decay - Present Status of CANDLES III System at Sea Level -
S.Umehara, T. Kishimoto, I. Ogawa, K. Matsuoka, G. Ito, K. Yasuda, M. Wada, R. Hazama and S. Yoshida
4. Neutrino-less Double Beta Decay of ^{48}Ca studied by ELEGANT VI
S. Umehara, T. Kishimoto, I. Ogawa, R. Hazama, H. Miyawaki, S. Yoshida, K. Matsuoka, K. Kishimoto, A. Katsuki, H. Sakai, D. Yokoyama, K. Mukaida, S. Tomii, Y. Tatewaki, T. Kobayashi, and A. Yanagisawa

Applications

1. Power Device Evaluation for High Energy Neutrons induced by Cosmic-ray
H. Asai, K. Sugimoto, Y. Iide, M. Matsuda, I. Nashiyama, Y. Amano, K. Takahisa, M. Fukuda and K. Hatanaka

II THEORETICAL PHYSICS

Quark-Hadron Nuclear Physics

1. Evolution from Di-Nucleus to Mono-Nucleus ; Neck Dynamics
Y. Abe, C. Shen, D. Boilley and B.G. Giraud
2. Elastic scattering of ^8B from ^{12}C with internal three cluster structure of ^8B
K. Horii, T. Furumoto, M. Takashina, Y. Taniguchi, H. Toki and Y. Sakuragi
3. Extended relativistic chiral mean field model for nuclear matter
J. Hu, Y. Ogawa, H. Toki, A. Hosaka and H. Shen
4. Beyond mean field approximation in nuclear matter
J. Hu, Y. Ogawa, H. Toki, A. Hosaka and H. Shen
5. Tensor optimized shell model for intermediate heavy nuclei
K. Ikeda, T. Myo, H. Toki and M. Valverde
6. Baryon resonances as bound states of a α -meson and a nucleon
H. Kaneko, H. Nagahiro and A. Hosaka
7. Tensor optimized shell model using bare interaction for light nuclei
T. Myo, H. Toki and K. Ikeda
8. Origin of Generalized Adler-Weisberger Sum Rule for the Nucleon and $\Delta(1232)$
Keitaro Nagata
9. Isospin dependence of surface properties in semi-infinite nuclear matter
N. Nose-Togawa and H. Toki
10. ϕ -meson photoproduction within coupled-channel K-matrix approach
S. Ozaki, H. Nagahiro, A. Hosaka and O. Scholten
11. Interpretation of a diffraction phenomenon observed in the angular distribution of α inelastic scattering on ^{12}C exciting the O_2^+ state
M. Takashina
12. The Density-dependent Correlations among Observables in Nuclear Matter and Hyperon-rich Neutron Stars
Schun T. Uechi
13. Relativistic chiral mean field model for finite nuclei
Y. Ogawa, H. Toki, S. Tamenaga, and A. Haga

Theoretical Physics with Supercomputer

1. Magnetic vortices in gluon plasma
M. N. Chernodub, Atsushi Nakamura and V. I. Zakharov
2. Propagator of the lattice domain wall fermion and the staggered fermion
Sadataka Furui

- 3. Small amplitude response of light nuclei in TDHFB method**
Y.Hashimoto
- 4. Scaling study of the spin-dependent relativistic corrections to the static inter-quark potential at $O(1/m^2)$ up to 1.2 fm**
Y. Koma, M. Koma, H. Wittig
- 5. Lattice Study of Low-lying Nonet Scalar Mesons in full QCD**
T. Kunihiro, S. Muroya, A. Nakamura, C. Nonaka, M. Sekiguchi and H. Wada
- 6. Osaka-Berlin joint analysis of the Coulomb gauge propagators in lattice QCD**
Y. Nakagawa, A. Voigt, E.-M. Ilgenfritz, M. Müller-Preussker, A. Nakamura, T. Saito, A. Sternbeck and H. Toki
- 7. Equation of State for Hadron-Quark Mixed Phase and Stellar Collapse**
K. Nakazato, K. Sumiyoshi and S. Yamada
- 8. Triaxiality Dependence of Octupole Vibrations on Superdeformed States in ^{44}Ti**
H. Ogasawara, K. Yoshida, M. Yamagami, S. Mizutori and K. Matsuyanagi
- 9. Probing dense matter by neutrino bursts from the black-hole-forming supernovae**
Kosuke Sumiyoshi
- 10. Color confinement due to the Abelian dual Meissner effect and gauge-independent monopoles**
T. Suzuki, M. Hasegawa, K. Ishiguro , Y. Koma and T. Sekido
- 11. Two-flavor lattice QCD study of Pseudoscalar-meson - Octet-baryon couplings**
Toru T. Takahashi, Guray Erkol and Makoto Oka
- 12. Clustering correlations in deformed states of p - and sd -shell nuclei**
Y. Taniguchi, Y. Kanada-En'yo and M. Kimura
- 13. The relevant gluonic energy scale of quark confinement from lattice QCD**
A. Yamamoto and H. Suganuma
- 14. Two-particle wave function on lattice in scalar QED**
T. Yamazaki and S. Sasaki

III EXPERIMENTAL FACILITIES AND INSTRUMENTS

Detectors

1. Gas target with cooling and reusable system for high resolution measurements at 0° and forward scattering angles
H. Matsubara, A. Tamii, T. Adachi, M. Dozono, H. Fujita, K. Fujita, Y. Fujita, N. Fujita, K. Hatanaka, D. Ishikawa, M. Itoh, M. Kato, T. Kawabata, S. Kuroita, Y. Maeda, K. Nakanishi, A. Nonaka, H. Okamura, H. Sakaguchi, S. Sakaguchi, Y. Sakemi, Y. Sasamoto, Y. Shimbara, Y. Shimizu, K. Suda, Y. Tameshige, H. Tokieda, R. Yamada, Y. Yamada, M. Yosoi and J. Zenihiro
2. Stability of analyzer target for the beam line polarimeter
H. Matsubara, A. Tamii, T. Adachi, M. Dozono, H. Fujita, K. Fujita, Y. Fujita, N. Fujita, K. Hatanaka, D. Ishikawa, M. Itoh, M. Kato, T. Kawabata, S. Kuroita, Y. Maeda, K. Nakanishi, A. Nonaka, H. Okamura, H. Sakaguchi, S. Sakaguchi, Y. Sakemi, Y. Sasamoto, Y. Shimbara, Y. Shimizu, K. Suda, Y. Tameshige, H. Tokieda, R. Yamada, Y. Yamada, M. Yosoi and J. Zenihiro
3. Sublimation process in windowless sulfur target
H. Matsubara, H. Sakaguchi, T. Kishi and A. Tamii
4. A polyethylene-foil rotary target with a motor in the atmosphere
H. Shimoda, K. Sagara, Y. Eguchi, S. Kuroita, K. Yashima, T. Sueta and Y. Maeda
5. Investigation of Soft Error Efficiency of SE Hardened Latch Circuit
Y. Tosaka, T. Uemura, H. Matsuyama, K. Shono, K. Takahisa, M. Fukuda and K. Hatanaka

Beams and Ion Sources

1. Production of polarized ^3He gas by means of cryogenic method
T. Inomata, M. Tanaka, Y. Takahashi, M. Fujiwara, H. Kohri, T. Ohta, C. Morisaki, T. Kunimatsu and M. Yosoi

IV ACCELERATORS

1. Operation of the RCNP Cyclotron
K. Hatanaka, M. Fukuda, T. Yorita, T. Saito, H. Tamura, M. Kibayashi, K. Nagayama, S. Morinobu, H. Gotoh, Y. Inata, H. Yana, Y. Ohe, K. Masuda, M. Rikiishi, T. Hata, K. Sadano, N. Saito, M. Miyamoto, T. Nakahara and Y. Kuramochi
2. AC Loss of the High Temperature Superconducting Magnet
K. Hatanaka, M. Fukuda, T. Yorita, T. Saito, J. Nakagawa, Y. Sakemi, K. Noda, T. Kawaguchi

- 3. Development of 2.45 GHz ECR proton source for high intensity beam production**

*H. Kawamata, M. Fukuda, K. Hatanaka, T. Yorita, J. Nakagawa and
M. Kibayashi*

- 4. Multiconductor transmission-line theory and the origin of electromagnetic noise**

H. Toki and K. Sato

- 5. 18 GHz superconducting ECR ion source**

*T. Yorita, K. Hatanaka, M. Fukuda, M. Kibayashi, S. Morinobu, H. Okamura,
A. Tamii*

V COMPUTER AND NETWORK

- 1. Computer and Network syustem at RCNP**

T. Hotta and H. Togawa

VI RADIATION PROTECTION

- 1. Radiation protection**

*K. Takahisa, K. Tominaga, H. Hinoshita, N. Yasutomi, M. Kibayashi, A. Tamii
and M. Fukuda*

VII PUBLICATIONS

- 7. 1 Publications
- 7. 2 Conference Proceedings and Presentations
- 7. 3 Academic Thesis
- 7. 4 Others

VIII CONFERENCES, WORKSHOPS AND COLLOQUIA

- 8. 1 International Conferences
- 8. 2 Domestic Workshops
- 8. 3 Colloquia
- 8. 4 RCNP Workshops

IX PERSONNEL

- 9. 1 Personnel
- 9. 2 Visiting Scientists
- 9. 3 Organization
- 9. 4 General Steering Committee
- 9. 5 Physics Program Advisory Committee (P-PAC)
- 9. 6 Beam Program Advisory Committee (B-PAC)
- 9. 7 Quark Program Advisory Committee (Q-PAC)