

CONTENTS

Part I

Plenary Sessions

Double beta decay experiments	
<i>A. Barabash.....</i>	13
The equation of state of symmetric and asymmetric nuclear matter	
<i>S. Shlomo.....</i>	22
Neutron-rich nuclei in Heaven and Earth	
<i>J. Piekarewicz.....</i>	33
Properties of heavy and superheavy nuclei	
<i>A. Sobiczewski.....</i>	43
Results by DAMA at Gran Sasso	
<i>R. Bernabei, P. Belli, F. Montecchia, F. Nozzoli, F. Cappella, A. Incicchitti, D. Prosperi, R. Cerulli, C.J. Dai, H.L. He, H.H. Kuang, J.M. Ma, Z.P. Ye.....</i>	51
Structure effects on reaction mechanisms in collisions induced by halo and weakly bound nuclei around the Coulomb barrier	
<i>P. Figuera, V. Scuderi.....</i>	64
Giant resonances under extreme conditions	
<i>N. Dinh Dang.....</i>	70
New insights into the multiple-humped fission barrier landscape of actinide nuclei	
<i>P.G. Thirolf, M. Csatlós, D. Habs, Y. Eisermann, T. Faestermann, G. Graw, J. Gulyás, R. Hertenberger, M. Hunyadi, A. Krasznahorkay, H. J. Maier, Z. Máté, T. Morgan, O. Schaile, W. Schwerdtfeger, C. Schürmann, J. Szerypo, H.-F. Wirth.....</i>	80

Section I. Collective Processes in Atomic Nuclei

The transport coefficients for slow collective motion	
<i>F.A. Ivanyuk.....</i>	91
Temperature dependence of the isovector dipole response for asymmetric spherical nuclei: a kinetic-theory approach	
<i>V.I. Abrosimov, O.I. Davidovskaya.....</i>	100
Diffuseness of nucleus-nucleus potential and diffuseness of density distribution in nuclei	
<i>V.Yu. Denisov, V.A. Nesterov.....</i>	108
Interaction potential between two axially symmetric nuclei	
<i>V.Yu. Denisov, N.A. Pilipenko.....</i>	115
Role of the entrance channel dynamics on the evaporation residue formation	
<i>A.K. Nasirov, G.G. Giardina, G. Mandaglio, M. Manganaro, A.I. Muminov, R. K. Utamuratov.....</i>	123
Tunneling along γ-axis between prolate and oblate shapes	
<i>A.Ya. Dzyublik, V.V. Utyuzh.....</i>	132
Effect of spectral statistics on the nuclear dissipation	
<i>V.M. Kolomietz, S.V. Radionov.....</i>	144
Semiclassical transport properties and shell structure in the nuclear collective dynamics	
<i>A.G. Magner, A.M. Gzhebinsky, S.N. Fedotkin.....</i>	151
Bubble instability of hot nuclear matter	
<i>V.M. Kolomietz.....</i>	168
Liquid and vapor dynamics of droplets due to shock waves	
<i>V.N. Kondratyev.....</i>	175
Theoretical description of nucleons paired correlations of even-even nuclei in the adiabatic three-particle model	
<i>R.M. Plekan, V.Yu. Pojda, I.V. Khimich.....</i>	183
Dynamical CP-violation in quasilocal quark models at nonzero quark chemical potential	
<i>A.A. Andrianov, V.A. Andrianov, S.S. Afonin.....</i>	193

Vibrational enhancement of nuclear level density	204
<i>O.M. Gorbachenko, V.A. Plujko.....</i>	
0^+ states and collective bands in deformed actinide nuclei	212
<i>A.I. Levon, G. Graw, G. Christen, Y. Eisermann, C. Günther, R. Hertenberger, J. Jolie, O. Möller, P. Thirolf, D. Tonev, H.-F. Wirth, N. V. Zamfir.....</i>	
Collective effects for β-decay of odd nuclei	225
<i>I.M. Vyshnevskyi, A.A. Kurteva, V.E. Mitroshin.....</i>	
Section II. Nuclear Reactions and Processes with Exotic Nuclei	
Study of the neutron halo structure in the two neutron transfer reactions	
<i>G.E. Belovitsky, V.P. Zavarzina, S.V. Zuyev, E.S. Konobeevski, A.V. Stepanov, N.G. Polukhina, N.I. Starkov, S.M. Lukyanov, Yu.G. Sobolev.....</i>	237
Peculiarities in the interaction of ${}^6\text{He}$ with ${}^{197}\text{Au}$ and ${}^{206}\text{Pb}$ at energies close to the Coulomb barrier	
<i>Yu.E. Penionzhkevich, R.A. Astabatyan, N.A. Demekhina, R. Kalpakchieva, A.A. Kulko, S.P. Lobastov, S.M. Lukyanov, E.R. Markaryan, V.A. Maslov, Yu.A. Muzychka, Yu.Ts. Oganessian, D.N. Rassadov, N.K. Skobelev, Yu.G. Sobolev, T. Zholdybaev.....</i>	246
$\alpha+t$ three-body reactions and excited levels of lightest nuclei	
<i>O.K. Gorpinich, O.M. Povoroznyk.....</i>	255
Description of the proton-triton recharge process with formation of intermediate isobar in diffraction approach	
<i>V.V. Davydovskyy, [M. V. Evlanov], V.K. Tartakovskyy.....</i>	263
Investigation of the deuteron-triton interaction	
<i>[V.A. Alyoshin], O.O. Belyuskina, S.V. Berdnichenko, V.I. Grantsev, V.O. Grashilin, T.I. Kibkalo, K.K. Kisurin, V.O. Kisurin, O.V. Kovalenko, M.F. Kolomiets, A.L. Lytvynsky, I.O. Mazny, O.M. Mofa, S.E. Omelchuk, G.P. Palkin, Yu.S. Roznyuk, B.A. Rudenko, L.S. Saltykov, V.G. Savchuk, V.S. Semenov, L.I. Slyusarenko, B.G. Struzhko, V.A. Shityuk, A. M. Schur.....</i>	270
Resonances in three-cluster continuum of ${}^5\text{H}$ nucleus	
<i>F. Arickx, J. Broeckhove, P. Hellinckx, V.S. Vasilevsky, A.V. Nesterov</i>	283
Determination of singlet nn-scattering length from data on NN- final state interaction in $n+d \rightarrow p+n+n$ reaction	
<i>E.S. Konobeevski, M.V. Mordovskoy, S.I. Potashev, V.A. Sergeev, S.V. Zuev.....</i>	293
Realistic nucleon-nucleon potential in resonating group method calculation for α-α scattering	
<i>Yu.E. Kozyr.....</i>	299
Model-independent description of the light nucleus-nucleus elastic scattering at intermediate energies	
<i>V.Yu. Korda, A.S. Molev, L.P. Korda.....</i>	306
About alternative approach to analytic representation of the Coulomb breakup amplitude	
<i>A.P. Ilyin.....</i>	314
Describing of e_0-electron yield from the source surface during radioactive decay	
<i>A.I. Feoktistov.....</i>	326
The ${}^{178\text{m}2}\text{Hf}$ isomer yield in reactions with different projectiles	
<i>S.A. Karamian.....</i>	331
The investigation of e_0-electron yield on the location of radioactive decay in ${}^{64}\text{Cu}$ sources	
<i>A.I. Feoktistov, A.A. Val'chuk, A.V. Kovalenko, N.F. Kolomiets, V.T. Kupryashkin, L.P. Sidorenko, I.P. Shapovalova.....</i>	341
Time resonances (explosions) in high-energy nuclear reactions	
<i>V.S. Olkhovsky, M.E. Dolinska, S.A. Omelchenko.....</i>	346
Investigation of excitation of indium isomers in the (γ, γ'), (γ, n) and (γ, p) reactions	
<i>V.S. Bokhinyuk, O.M. Parlag, N.T. Sabolchiy, [L.V. Sokolyuk], I.V. Khimich.....</i>	352
Experimental study of the excited states of helium isotopes in the reactions ${}^7\text{Li}(d, {}^{3,4,6}\text{He})$ at deuteron energy of 37 MeV	
<i>Yu.N. Pavlenko, O.K. Gorpynych, V.N. Dobrikov, N.L. Doroshko, V.O. Kyva, I.N. Kolomiets, V. I. Medvedev, Val. M. Pirnak.....</i>	357

The cumulative yields of the ^{237}Np photofission fragments	369
<i>O.O. Parlag</i>	369
Determination of value of singlet nn-scattering length by solution of inverse problem for data on $n+d \rightarrow p+n+n$ reaction yield	373
<i>S.V. Zuyev, E.S. Konobeevski, M.V. Mordovskoy</i>	373
The induced change of an electrical charge of ^7Li at collision with fast neutrons	379
<i>B.A. Martsynkevich, A.M. Khilmanovich, M.I. Levchuk, S.V. Korneyev, S.E. Chigrinov, V.S. Butsev</i>	379
Resonant production of electron-positron pair by a photon with photon emission in strong magnetic field	388
<i>P.I. Fomin, R.I. Kholodov</i>	388
Positron investigations in the Institute of Physics National Academy of sciences of Belarus	393
<i>S. K. Andrukhovich, N. Antovich, A. V. Berestov, S. N. Harkusha, O. N. Metelitsa, E. A. Rudak</i>	393
New color statistics for the heavy nuclei fission fragment systematization	402
<i>V.T. Maslyuk, O.O. Parlag, O.I. Lendyel, T.J. Marinetc</i>	402
Radiative capture of protons by nuclei of the chromium isotopes	407
<i>S.N. Utenkov, K.V. Shebeko</i>	407
Correlation β-particles with “shake off” electrons under β-decay ^{152}Eu	412
<i>N.F. Mitrokhovich</i>	412
List of participants	L.1
Author index	I.1

Part II

Section III. Rare Nuclear Processes

Searches for rare processes by DAMA at Gran Sasso	427
<i>R. Bernabei, P. Belli, F. Montecchia, F. Nozzoli, A. d'Angelo, F. Cappella, A. Incicchitti, D. Prosperi, S. Castellano, R. Cerulli, C. J. Dai, F. Danevich, V. I. Tretyak</i>	427
To a possibility of the $^{178m^2}\text{Hf}$ isomer alpha-decay	437
<i>S.A. Karamian, J.J. Carroll, S. Iliev, S.P. Tretyakova</i>	437
Magic nuclei magnetodynamics in magnetar crusts	443
<i>V.N. Kondratyev, I.M. Kadenko</i>	443
Creation and transmutations of ultramagnetized atomic nuclei	453
<i>V.N. Kondratyev, I.M. Kadenko</i>	453
Anomalies in nuclear transitions	459
<i>I.M. Vyshnevskyi, V.A. Zheltonozhsky, N.V. Strilchuk</i>	459
Neutrinoless double beta decay of ^{76}Ge with GERDA	469
<i>L. Niedermeier</i>	469
Contribution of the excited 1^+ states to the ^{116}Cd 2v2β-transition amplitude	473
<i>S.V. Semenov, Yu.V. Gaponov, F. Šimkovic, R. Dvornicky</i>	473
Preliminary results on the search for ^{100}Mo 2β decay to the first excited 0^+_1 level of ^{100}Ru	479
<i>P. Belli, R. Bernabei, R.S. Boiko, R. Cerulli, F. A. Danevich, S. d'Angelo, A. Incicchitti, V.V. Kobylev, B.N. Kropivnyansky, M. Laubenstein, P.G. Nagornyi, S.S. Nagorny, S. Nisi, D.V. Poda, D. Prosperi, V.I. Tretyak, I.M. Vyshnevskyi, S.S. Yurchenko</i>	479
Decay of isomers stimulated by the laser radiation	483
<i>A.Ya. Dzyublik, V. Méot, G. Gosselin</i>	483
Nuclear excitation at the positron-atomic electron annihilation	491
<i>S.N. Fedotkin, V.A. Zheltonozhskii</i>	491
Particle tunneling and scattering in a spherical three-dimensional potential with a barrier	496
<i>V.S. Olkhovsky, V. Petrillo, J. Jakiel, W. Kantor</i>	496

Section IV. Relativistic Nuclear Physics

Search for time-reversal violation in charged-kaon decays	507
<i>P. Depommier</i>	507

Meson-two-nucleon clothed generators of the Poincaré group derived from quantum field theory: mass and vertex renormalization	514
<i>V.Yu. Korda, P.A. Frolov.....</i>	
Application of the unitary clothing transformation method to the charge renormalization problem in quantum field theory	521
<i>V.Yu. Korda, I.V. Eletskikh.....</i>	

Section V. Neutron Physics

Thermal neutron converter for irradiations with fission neutrons	
<i>F.M. Wagner, Th. Bücherl, S. Kampfer, A. Kastenmüller, W. Waschkowski.....</i>	533
Investigation of the scattering cross sections of neutrons on carbon nuclei at the reactor filtered beams	
<i>O. Gritzay, M. Gnidak, V. Kolotyi, O. Korol, V. Razbudey, V. Venedyktov, J. Richardson, K. Sale.....</i>	541
On the use of single-crystal materials as thermal neutron filters	
<i>M. Adib.....</i>	548
Peculiarities of ^{238}U fission by neutrons with energies up to 200 MeV	
<i>Yu.V. Kibkalo.....</i>	560
Capture cross section of $^{181}\text{Ta} (\text{n}, \gamma)^{182}\text{Ta}$ reaction at 2 keV filtered neutron beam	
<i>O.O. Gritzay, V.A. Libman, A.V. Chyzh.....</i>	569
Cross-section calculations for $^{181}\text{Ta}(\text{n}, \text{g})^{182\text{m}^2}\text{Ta}$ and $^{181}\text{Ta}(\text{n}, \text{g})^{182(\text{g+m}^1+\text{m}^2)}\text{Ta}$ reactions in energy range 0.002 - 15 MeV within empire II code	
<i>R.V. Yermolenko, I.M. Kadenko, V.A. Plujko.....</i>	577
Filter of quasi-monochromatic neutrons with average energy 7.5 keV on the basis of natural copper	
<i>O.O. Gritzay, O.I. Kalchenko, N.A. Klimova, V.V. Kolotyi, V.A. Libman, P.M. Vorona.....</i>	583
Fast neutron scattering mechanism research for middle atomic weight odd nuclei	
<i>I.O. Korzh, M.T. Sklyar.....</i>	586
Cross sections of (n, p) nuclear reactions on zirconium isotopes	
<i>S.V. Begun, N.R. Dzysiuk, I.M. Kadenko, V.K. Maidanyuk, G.I. Primienko.....</i>	594
Average resonance parameters of Cd and Sn even isotopes	
<i>I.O. Korzh, M. M. Pravdyvyy, M. T. Sklyar.....</i>	599
Experimental installations for investigation of scattering neutron angle distribution	
<i>O.O. Gritzay, V.V. Kolotyi, V.A. Pshenychnyi, N.A. Klimova, V.A. Libman, A.I. Kyslitskyi, V.M. Venedyktov, V.M. Archipov.....</i>	606

Section VI. Physics of Nuclear Reactors, Problems of Atomic Energy and Reactors of the Future

Analysis of information resources on prospective electronuclear systems	
<i>V.F. Klepikov, V.Yu. Korda, A.G. Shepelev, A.S. Molev, L.P. Korda, O.V. Nemashkalo, T.A. Ponomarenko, L.D. Yurchenko.....</i>	617
Superconducting driver for sub-critical assembly	
<i>M.I. Bratchenko, V.V. Gann, I.S. Guk, A.N. Dovbnia, S.V. Dyuldya, S.G. Kononenko, F.A. Peev, A.S. Tarasenko, M. van der Wiel, J.I.M. Botman.....</i>	622
The ecological safety of Ukrainian NPPs: problems and ways of their salvation	
<i>S.V. Barbashev.....</i>	632
Alloy Zr1Nb for atomic energy in Ukraine	
<i>V.M. Azhazha, I.N. Butenko, B.V. Borts, V.S. Vakhrusheva, P.N. Vyugov, N.P. Vyugov, K.A. Lindt, I.M. Nekludov, I.A. Petelgusov, V.I. Savchenko.....</i>	636
Application of the RELAP5-3D code in support of the NPP units safety analysis in Ukraine	
<i>O.M. Shkarupa, I.M. Kadenko.....</i>	645
The influence of the electron irradiation and fluorine soil melt to the properties of hastalloys	
<i>V.M. Azhazha, A.S. Bakay, Yu.P. Bobrov, A.N. Dovbnia, S.D. Lavrininenko, N.N. Pilipenko, I.A. Petelguzov, V.I. Savchenko.....</i>	652

Evaluation of the WWER-1000 vessel materials fracture toughness	659
<i>E.U. Grynik, V.N. Revka, L.I. Chyrko, Yu.V. Chaikovsky.....</i>	659
Stochastic modeling of neutron processes in nuclear reactor and influence of temperature feedbacks on possibilities of emergency development	666
<i>V.V. Ryazanov, S.G. Shpyrko.....</i>	666
Cask size and weight reduction through the use of depleted uranium dioxide-concrete material	680
<i>S.Y. Lobach, J.M. Haire.....</i>	680
Dosimetry of surveillance specimens irradiated at WWER-1000 reactor	686
<i>O.V. Grytsenko, V.N. Bukanov, V.L. Dyemokhin, O.G. Vasylyeva, Y.P. Mahlers.....</i>	686
Design of methodical basis of a system monitoring of WWER-440 pressure vessel radiation exposure	692
<i>A.M. Pugach, V.N. Bukanov, E.G. Vasylyeva, O.V. Grytsenko, V.L. Dyemokhin, S.M. Pugach.....</i>	692
Determination of irradiation conditions of WWER-1000 reactor internals	698
<i>S.M. Pugach, V.N. Bukanov, O.V. Grytsenko, V.L. Dyemokhin.....</i>	698
The analysis of the steam generator collector cover breakaway accident with full loss of power supply of NPP unit with WWER-1000	703
<i>V.M. Zenov.....</i>	703
Spent nuclear fuel dry storage of the Zaporizhya Nuclear Power Plant. Safety assurance	709
<i>A.E. Luchna, A.I. Lavrenchuk, V.A. Sednev, V.M. Vasilchenko, O.M. Dvoeglazov, V.I. Medvedev, Yu.M. Pechera.....</i>	709
Development of nuclear energy in Ukraine. Needs, shortages and advantages	717
<i>L.L. Litvinsky, O.A. Purtov.....</i>	717
Multicriteria system of support of a decision making of the choice of new types of reactors and sites of their location	723
<i>V.G. Batiy, V.V. Derenhevskyy.....</i>	723
The questions of calculation and construction of radiation shielding of the accelerator-storage system N-100M	732
<i>A.V. Mazilov, I.M. Karnauhov, Y.P. Kurilo, A.A. Mazilov, F.A. Peev, B.N. Razsukovanyi.....</i>	732

Section VII. Applied Nuclear Physics and Technique of Experiments

The microanalytical facility on the base of the compact electrostatic accelerator of IAP NAS of Ukraine	745
<i>V.E. Storizhko, A.A. Drozdenko, V.I. Miroshnichenko, A.G. Ponomarev.....</i>	745
Fundamental physics on Kharkov superconducting electron accelerator on energy up to 730 MeV (project "SALO")	754
<i>V.B. Ganenko, A.Yu. Korchin, V.V. Kotljar.....</i>	754
Fast spectrometer for analysis of concentration profiles of the hydrogen isotopes in materials	761
<i>S.V. Artemov, Ya.S. Abdullaeva, A.A. Karakhodzaev, G.A. Radyuk, V.P. Yakushev, I.L. Zaitsevsky, B.V. Kozgushko, S.V. Shevchenko, L.S. Saltykov, L.I. Slusarenko.....</i>	761
The optimized probe forming system for the Kiev nuclear microprobe	770
<i>S.A. Lebed, N.G. Tolmachov, I.M. Vyshnevskyi.....</i>	770
Composition scintillation elements on basic of small-grained paraterphenyl	776
<i>A.S. Raevskiy, L.A. Andryushchenko, L.S. Gordienko, B.V. Grinyov, V.A. Tarasov.....</i>	776
Stand for testing neutron scintillation detectors	780
<i>A.V. Andreev, Yu.M. Burmistrov, E.S. Konobeevski, V.N. Marin, M.V. Mordovskoy, S.I. Potashev.....</i>	780
Determination of fission fragment yields using the sorbtion process	784
<i>H.V. Vasyljeva, V.S. Kouts, V.A. Pylypchenko, A.P. Osypenko.....</i>	784
Modification of the Wind's method for the determination of the particle momentum in the magnetic spectrometer	789
<i>A.M. Sokolov.....</i>	789
System of measurements automation of angular dispersion of neutrons	794
<i>I.A. Mazny, A.N. Kovalev, F.N. Berezin, A.P. Voyter, V.A. Grashilin, O.O. Gritsay, M.I. Doronin, V.A. Kisurin, V.I. Kopachev.....</i>	794

System of registration of multipleparameter streams	
<i>F.N. Berezin, A.P. Voyter, V.A. Grashilin, V.A. Kisurin, A.N. Kovalev, I.A. Mazny.....</i>	802
Extension of abilities of the 4π-gamma-spectrometers "PRIPYAT"	
<i>S.K. Andrukovich, A.V. Berestov, S.N. Harkusha, E.A. Rudak, A.M. Khilmanovich, A. S. Uzunbadjakov, F.E. Zyazyulya, N. Antovich.....</i>	809
Temperature stability of the microstrip metal detectors	
<i>A.O. Lymanets, O.S. Kovalchuk, O.V. Mykhailenko, Yu.V. Pylypchenko, V.M. Pugatch.....</i>	814
Determination of the energy of atomic nuclei excited states by means of "basic" transitions	
<i>A.P. Lashko, T.N. Lashko.....</i>	819
Analysis of uncertainties of gamma-ray energy measurement made with semiconductor spectrometers	
<i>A.P. Lashko, T.N. Lashko.....</i>	823
Use of the ^{235}U fission fragments gamma-radiation for the Ge- and Ge(Li)-detectors calibration	
<i>O.O. Parlag.....</i>	829
Study of yttrium-iron garnet films long-term stability under irradiation by neutrons, protons and electrons	
<i>V.I. Kirischuk, V.A. Ageev, L.V. Sadovnikov, N.V. Strilchuk, V.A. Zheltonozhsky, Yu.V. Koblyanskiy, G.A. Melkov, O.I. Puzik.....</i>	833
Radiation test of NPPs' equipment	
<i>I.M. Vyshnevskyi, V.I. Sakhno, O.V. Sakhno, S.P. Tomchay, T.V. Khrin, A.G. Zelinskyy.....</i>	838
Development of universal spectrometers of radioaerosols	
<i>O.S. Frolov, A.A. Sadovnichiy, R.B. Podviyanyuk, Yu. N. Pavlenko, I.L. Zaytsevskiy, V.N. Kovalenko, I.O. Pavlenko.....</i>	841
NSC KIPT detectors from CdTe and CdZnTe for spectrometry gamma and alpha of radiations	
<i>V.V. Levenets, O.P. Omelnyk, A.O. Shchur, V.M. Borysenko, V.E. Kutny, A.V. Rybka, I.N. Shlyakhov, O.O. Zakharchenko.....</i>	847
NSC KIPT analytical nuclear-physical complex "SOKOL"	
<i>V.N. Bondarenko, L.S. Glasunov, A.V. Goncharov, A.V. Zats, V.V. Kuzmenko, V.V. Levenets, A.P. Omelnik, V.M. Pistryak, V.I. Sukhostavets, A.A. Tschur, N.P. Usikov.....</i>	852
Optimization of the recoil nuclei method for the analysis of the profile of the hydrogen isotopes concentration in materials	
<i>S.V. Artemov, E.A. Zaparov, G.A. Radyuk, V.P. Yakushev, M.S. Brodin, S.V. Shevchenko, N.F. Kolomiets, L.I. Slusarenko.....</i>	858
Author index.....	I.1