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Publications and Talks

Publications ¹

Subthreshold ϕ Meson Production in Heavy-Ion Collisions

(Nucl. Phys. A 705 (2002) 223)

Barz, H.W., M. Zétényi, Gy. Wolf, **B. Kämpfer**

Abstract: Within a transport code of BUU type the production of ϕ -mesons in the reactions Ni + Ni at 1.93 A·GeV and Ru + Ru at 1.69 A·GeV is studied. New elementary reaction channels $\rho N(\Delta) \rightarrow \phi N$ and $\pi N(1520) \rightarrow \phi N$ are included. In spite of a substantial increase of the ϕ multiplicities by these channels the results stay below the tentative numbers extracted from experimental data.

The Longitudinal Polarimeter at HERA

(Nucl. Instr. Meth. A 479 (2002) 334)

Beckmann, M., A. Borissov, S. Brauksiepe, F. Burkart, H. Fischer, J. Franz, F.H. Heinsius, K. Königsmann, W. Lorenzon, F.M. Menden, A. Most, S. Rudnitsky, C. Schill, **J. Seibert**, A. Simon

Abstract: The design, construction and operation of a Compton back-scattering laser polarimeter at the HERA storage ring at DESY are described. The device measures the longitudinal polarization of the electron beam between the spin rotators at the HERMES experiment with a fractional systematic uncertainty of 1.6 %. A measurement of the beam polarization to an absolute statistical precision of 0.01 requires typically one minute when the device is operated in the multi-photon mode. The polarimeter also measures the polarization of each individual electron bunch to an absolute statistical precision of 0.06 in approximately five minutes. It was found that colliding and non-colliding bunches can have substantially different polarizations. This information is important for the collider experiments H1 and ZEUS for their future longitudinally polarized electron program because those experiments use the colliding bunches only.

Development of Low-Mass Drift Chambers for the HADES Spectrometer

(Nucl. Instr. Meth. A 477 (2002) 397)

H. Bokemeyer, J.L. Boyard, V. Chepurinov, S. Chernenko, H. Daues, **F. Dohrmann**, **W. Enghardt**, O. Fateev, C. Garabatos, L. Glonti, **E. Grosse**, J. Hehner, T. Hennino, J. Kempter, W. Koenig, C. Müntz, **L. Naumann**, A. Petrov, J. Pouthas, P. Rosier, L. Smykov, H. Stelzer, **M. Sobiella**, J. Stroth, J. Wüstenfeld, Yu. Zanevsky, P. Zumbruch

Abstract: The High Acceptance Di-Electron Spectrometer (HADES) is a detector arrangement combined with a superconducting toroid for lepton pair spectroscopy presently built up at GSI (Darmstadt). HADES is designed to cope with the high-multiplicity environment of heavy ion collisions at 1 AGeV and intensities of up to 10^8 beam particles per second and central event rates of 10^5 s⁻¹. The detector has a geometrical acceptance of almost 50 % for e⁺e⁻ pairs and a mass resolution of 0.8 % for ρ and ω mesons. Four low-mass drift chamber systems, two before and two behind the magnet, serve for charged particle track reconstruction. Design aspects of the drift chambers and first results from beam tests are presented.

In-band and inter-band B(E2) values within the Triaxial Projected Shell Model

(Eur. Phys. J. A 15 (2002) 455)

Boutachkov, P., A. Aprahamian, Y. Sun, J.A. Sheikh, **S. Frauendorf**

Abstract: The Triaxial Projected Shell Model (TPSM) has been successful in providing a microscopic description of the energies of multi-phonon vibrational bands in deformed nuclei. We report here on an extension of the TPSM to allow, for the first time, calculations of B(E2) values connecting γ - and $\gamma\gamma$ -vibrational bands and the ground-state band. The method is applied to 166,168Er. It is shown that most of the existing B(E2) data can be reproduced rather well, thus strongly supporting the classification of these states as γ -vibrational states. However, significant differences between the data and the calculation are seen in those B(E2) values which involve odd-spin states of the γ -band. Understanding these discrepancies requires accurate experimental measurements and perhaps further improvements of the TPSM.

¹From the authors printed in **bold** further information can be obtained

Identification of K^+ -Mesons from Subthreshold pA Collisions with ANKE at COSY-Jülich
(Nucl. Instrum. Meth. A 481 (2002) 378)

Büscher, M., H. Junghans, V. Koptev, M. Nekipelov, K. Sistemich, H. Ströher, S. Barsov, G. Borchert, W. Borgs, **M. Debowski**, W. Erven, R. Esser, P. Fedorets, D. Gotta, M. Hartmann, V. Hejny, A. Kacharava, H.R. Koch, V. Komarov, P. Kulesa, A. Kulikov, G. Macharashvili, S. Merzlyakov, S. Mikirtychyants, **H. Müller**, A. Mussgiller, R. Nellen, M. Nioradze, H. Ohm, A. Petrus, F. Rathmann, Z. Rudy, R. Schleichert, **C. Schneider**, O.W.B. Schult, H.J. Stein, I. Zychor

Abstract: The spectrometer ANKE has been put into operation at the accelerator COSY of the Forschungszentrum Jülich in spring 1998. An initial scientific goal is to study K^+ -production in pA collisions at subthreshold energies far below the free NN-threshold at $T_p = 1.58\text{GeV}$. This requires the identification of K^+ -mesons in a background of pions and protons, about 10^6 times more intense. In this paper the sophisticated detection system and the software procedures for kaon identification are described. With the help of TOF, energy-loss and range measurements as well as the track information from wire chambers, it is possible to measure $d^2\sigma/d\Omega dp$ for deep subthreshold K^+ production at beam energies down to $T_p = 1.0\text{GeV}$.

Centrality Dependence of Thermal Parameters in Heavy-Ion Collisions at Relativistic Energies
(Phys. Rev. C 65 (2002) 027901)

Cleymans, J., **B. Kämpfer**, S. Wheaton

Abstract: The centrality dependence of thermal parameters, characterizing the hadron multiplicities, is determined phenomenologically for lead-on-lead collisions at CERN-SPS for a beam energy of 158 A GeV. The strangeness equilibration factor shows a clear, approximately linear, increase with increasing centrality, while the freeze-out temperature and chemical potential remain constant.

FTIR- and Fluorescence-Spectroscopic Analyses of Receptor G-Protein Coupling in Photoreception
(Curr. Org. Chem. 6 (2002) 1259)

Fahmy, K.

Abstract: G protein-coupled receptors (GPCRs) are heptahelical transmembrane proteins. They transduce a large variety of extracellular signals, allowing perception of taste, odor, hormones, and light. Binding of an extracellular ligand induces structural changes in the cytosolic domain of a GPCR which, thereby, catalyzes nucleotide exchange in a G-protein. Rhodopsins, the visual pigments, are prototypical GPCRs that are activated by photoisomerization of covalently bound 11-cis retinal. Unlike other GPCRs, bovine rhodopsin and transducin, its cognate G-protein, can be prepared from cow eyes in large quantities for spectroscopic and biochemical investigations. Rhodopsin is the best studied GPCR and the only one for which an X-ray structure has been solved. Structural information together with the wealth of biophysical data on native and recombinant rhodopsins allows to determine structure function relationships that are relevant to GPCR-dependent signaling in general. Here, results from Fourier-transform-infrared (FTIR) spectroscopic studies of rhodopsin and measurements of nucleotide-dependent transducin fluorescence are reviewed. Intra- and intermolecular processes during signaling by the photoreceptor have thus been identified and analyzed kinetically. Recent applications of these techniques concern rhodopsin transducin coupling in synthetic lipidic matrices and analysis of drug action at the receptor G protein interface. The data are discussed in the context of the crystal structure of rhodopsin and additional biochemical information if required for the understanding of the spectroscopic results.

Kaon and Antikaon Production in Heavy Ion Collisions at 1.5 A GeV
(J. Phys. G 28 (2002) 2011)

Förster, A. for the KaoS Collaboration: I. Böttcher, A. Förster, **E. Grosse**, P. Koczon, B. Kohlmeyer, M. Menzel, **L. Naumann**, H. Oeschler, F. Pühlhofer, **W. Scheinast**, E. Schwab, P. Senger, Y. Shin, H. Ströbele, C. Sturm, F. Uhlig, W. Walus, **A. Wagner**

Abstract: At the Kaon Spectrometer KaoS at SIS, GSI the production of kaons and antikaons in heavy ion reactions at a beam energy of 1.5 AGeV has been measured for the collision systems Ni+Ni and Au+Au. The K^-/K^+ ratio is found to be constant for both systems and as a function of impact parameter but the slopes of K^+ and K^- spectra differ for all impact parameters. Furthermore the respective polar angle distributions are presented as a function of centrality.

Dependence of Energy Loss of Hard Jets on the Initial Thermodynamic State of Deconfined Matter at RHIC

(Phys. Rev. C 66 (2002) 014908)

Gallmeister, K., **B. Kämpfer**, O.P. Pavlenko

Abstract: The dependence of the radiative energy loss of hard partons ($E > 10$ GeV) on the initial thermodynamic parameters is studied for deconfined matter to be expected at the Relativistic Heavy-Ion Collider (RHIC). We demonstrate that the specific QCD radiation pattern with a nonlinear dependence of the energy loss on the propagated distance leads to a strong increase of the energy loss with increasing initial entropy of deconfined matter supposing its lifetime is less than the average time to pass through the medium. This is in contrast to a parametrization with constant energy loss per unit length of propagation. For a sufficiently high initial temperature a two-regime behavior of the energy loss as a function of the initial parton momentum occurs. The angular structure of the energy loss of hard jets with respect to the initial temperature is also discussed for RHIC conditions.

Evidence for the Absence of Regularization Corrections to the Partial-Wave Renormalization Procedure in One-Loop Self-Energy Calculations in External Fields

(Phys. Rev. A 65 (2002) 042110)

Goideenko, I., G. Plunien, **S. Zschocke**, L. Labzowsky, G. Soff

Abstract: The equivalence of the covariant renormalization and the partial-wave renormalization (PWR) approaches is proven explicitly for the one-loop self-energy (SE) correction of a bound electron state in the presence of external perturbation potentials. No "spurious" correction terms to the noncovariant PWR scheme are generated for Coulomb-type screening potentials and for external magnetic fields. It is shown that in numerical calculations of the SE with Coulombic perturbation potential spurious terms result from an improper treatment of the unphysical high-energy contribution. A method for performing PWR utilizing the relativistic B-spline approach for construction of the Dirac spectrum in external magnetic fields is proposed. This method is applied for calculating QED corrections to the bound-electron g factor in H-like ions. Within a level of accuracy of about 0.1 % no spurious terms are generated in numerical calculations of the SE in magnetic fields.

THz radiation from free electron lasers and its potential for cell and tissue studies

(Phys. Med. Biol. 47 (2002) 3755)

Grosse, E.

Abstract: Free electron lasers (FELs) allow for the generation of electromagnetic radiation (EM) in a wide field of frequencies (respectively wavelengths) through the proper adjustment of the energy of an electron beam and the field configuration of a magnetic undulator passed by this beam. Terahertz (THz) radiation covers the region of the electromagnetic spectrum between approximately 0.3 and 30 THz and thus can be considered a continuation of the optical spectrum beyond the far infrared (IR). The very interesting results obtained from various studies of the interaction between IR radiation and biomolecules or tissue have stimulated increasing interest in the study of biological systems using THz radiation. This paper points out what role modern FELs can play in this research.

Search for mass-symmetric ternary fission in the reactions $^{14}\text{N}(53 \text{ AMeV}) + ^{197}\text{Au}$ and ^{232}Th

(Nucl. Phys. A 712 (2002) 207)

Herbach C.-H., D. Hilscher, V.G. Tishchenko, **P. Gippner**, D.V. Kamanin, W. von Oertzen, H.-G. Ortlepp, Yu.E. Penionzhkevich, Yu.V. Pyatkov, G. Renz, **K.D. Schilling**, O.V. Strelakovsky, **W. Wagner**, V.E. Zhuchko

Abstract: Ternary fission of heavy hot composite systems with excitation energies of 1.5 - 2.5 MeV/amu has been studied in the reactions of $^{14}\text{N}(53 \text{ AMeV})$ with ^{197}Au and ^{232}Th . The ternary yields have been explored as a function of the charge Z_L of the lightest fragment: while Z_L increases from 6 to 25, the cross sections decrease from 5 to 0.08 mb for N + Au and from 15 to 0.8 mb for N + Th. The velocity vector $\vec{\nu}_L$ of the lightest fragment has been investigated in the rest frame of the other two heavier fragments. Two different components are observed: (i) an isotropic one with values of ν_L corresponding to the Coulomb repulsion from the combined heavier fragments before separation and, (ii) an anisotropic contribution with the lightest fragment emitted with lower ν_L perpendicular to the scission axis of the two heavier fragments. The latter component is distinguished from the isotropic one by an enhanced fraction of mass-symmetric ternary events and by up to 50 MeV lower total kinetic fragment energies. These features are indicative of a collinear stretched scission configuration, where the lightest fragment is positioned between the two heavier ones.

Proton and deuteron rapidity distributions and nuclear stopping in $^{96}\text{Ru}(^{96}\text{Zr}) + ^{96}\text{Ru}(^{96}\text{Zr})$ collisions at 400 A MeV

(Phys. Rev. C 66 (2002) 034901)

Hong, B., Y.J. Kim, D.H. Kang, Y. Leifels, F. Rami, B. de Schauenburg, K.S. Sim, J.P. Alard, A. Andronic, V. Barret, Z. Basrak, N. Bastid, G. Berek, R. Čaplár, P. Crochet, A. Devismes, P. Dupieux, M. Dželalija, C. Finck, Z. Fodor, A. Gobbi, Yu. Grishkin, O.N. Hartmann, N. Herrmann, K.D. Hildenbrand, J. Kecskemeti, M. Kirejczyk, P. Koczon, M. Korolija, **R. Kotte**, T. Kress, R. Kutsche, A. Lebedev, X. Lopez, **W. Neubert**, D. Pelte, M. Petrovici, W. Reisdorf, D. Schüll, Z. Seres, B. Sikora, V. Simion, K. Siwek-Wilczyńska, V. Smolyankin, M.R. Stockmeier, G. Stoicea, P. Wagner, K. Wiśniewski, **D. Wohlfarth**, I. Yushmanov, A. Zhilin

Abstract: We present the centrality dependence of proton and deuteron rapidity distribution in Ru + Ru collisions at 400 A MeV. Data are compared with isospin quantum molecular dynamics (IQMD) calculations under various assumptions on the nucleon-nucleon cross section in the medium. The rapidity spectra of both particles can be reproduced by IQMD with a free nucleon-nucleon cross section for the most central collisions. The ratio of baryon rapidity distributions in isospin asymmetric collisions systems shows incomplete mixing and partial transparency of the projectile and target nuclei at this beam energy.

T = 0 and T = 1 States in the Odd-Odd N = Z Nucleus, $^{70}\text{Br}_{35}$

(Phys. Rev. C 65 (2002) 064307)

Jenkins, D.G., N.S. Kelsall, C.J. Lister, D.P. Balamuth, M.P. Carpenter, T.A. Sienko, S.M. Fischer, R.M. Clark, P. Fallon, A. Görgen, A.O. Macchiavelli, C.E. Svensson, R. Wadsworth, W. Reviol, D.G. Sarantites, G.C. Ball, J. Rikovska Stone, O. Juillet, P. Van Isacker, A.V. Afanasjev, **S. Frauendorf**

Abstract: Excited states in ^{70}Br were populated in the $^{40}\text{Ca}(^{32}\text{S}, pn)$ reaction at $E_{beam} = 80\text{-}100$ MeV and the $^{40}\text{Ca}(^{36}\text{Ar}, \alpha pn)$ reaction at $E_{beam} = 145$ MeV. The resulting gamma decay was detected using the Gammasphere array triggered by a 30-element neutron detector. The cross-bombardment allowed the unambiguous assignment of levels to ^{70}Br , comprising a total of 32 states built both on the $J^\pi = 0^+$ ground state and a previously known $J^\pi = 9^+$ isomer, which is located at an excitation energy of 2293 keV by the observation of linking transitions. The structures are discussed within the context of the two-quasiparticle plus rotor model, the IBM-4 model and the cranked Nilsson-Strutinsky formalism. The nonobservation of a doublet of $J = 0, T = 1$ and $J = 1, T = 0$ states at low excitation in ^{70}Br is indicative that $T = 0$ proton-neutron pairing strength is weak in comparison to $T = 1$ pairing.

Beta Decay of ^{57}Zn

(EPJdirect A3 (2002) 1)

Jokinen, A., A. Nieminen, J. Äystö, R. Borcea, E. Caurier, P. Dendooven, M. Gierlik, M. Górski, H. Grawe, M. Hellström, M. Karny, Z. Janas, R. Kirchner, M. La Commara, G. Martinez-Pinedo, P. Mayet, H. Penttilä, A. Plochocki, M. Rejmund, E. Roeckl, M. Sawicka, C. Schlegel, K. Schmidt, **R. Schwengner**

Abstract: Beta-delayed proton decay of ^{57}Zn has been investigated at the GSI on-line isotope separator. The studied ^{57}Zn nuclei were produced in fusion evaporation reactions by using a 150 MeV ^{32}S beam on a ^{28}Si target. Beta-delayed protons were measured by a charged-particle telescope detector. The observed decay pattern was used to construct the level scheme of ^{57}Cu and to extract the beta feeding distribution. The experimental results are compared with shell-model calculations.

Dileptons and Photons from Central Heavy Ion Collisions at CERN-SPS

(Nucl. Phys. A 698 (2002) 424)

Kämpfer, B., K. Gallmeister, O.P. Pavlenko, C. Gale

Abstract: A unique parameterization of secondary (thermal) dilepton and photon yields in heavy-ion experiments at CERN-SPS is proposed. Adding those thermal yields to background contributions the spectral shapes of the CERES/NA45, NA38, NA50, HELIOS/3 and WA98 data from experiments with lead and sulfur beams can be well described.

ϕ Puzzle in Heavy-Ion Collisions at 2 AGeV: How Many K^- from ϕ Decays?

(J. Phys. G 28 (2002) 2035)

Kämpfer, B., R. Kotte, C. Hartnack, J. Aichelin,

Abstract: The preliminary experimental data on ϕ production in the reaction $\text{Ni}(1.93 \text{ AGeV}) + \text{Ni}$ point to a puzzling high ϕ yield which can not be reproduced with present transport codes. We survey the experimental situation and present prospects for dedicated measurements of the ϕ multiplicities with the K^+K^- and e^+e^- channels at HADES and FOPI.

The Influence of the $N = 50$ Neutron Core on Dipole Excitations in ^{87}Rb

(Phys. Rev. C 65 (2002) 054315)

Käubler, L., K.D. Schilling, R. Schwengner, F. Dönau, E. Grosse, D. Belic, P. von Brentano, M. Bubner, C. Fransen, M. Grinberg, U. Kneissl, C. Kohstall, A. Linnemann, P. Matschinsky, A. Nord, N. Pietralla, H.H. Pitz, M. Scheck, F. Stedile, V. Werner

Abstract: Dipole excitations in the semimagic $N = 50$ nucleus ^{87}Rb were investigated at the Stuttgart Dynamitron facility using bremsstrahlung with an end-point energy of 4.0 MeV. The widths Γ or the reduced excitation probabilities $B(\text{M}1) \uparrow$ of 19 states were determined for the first time. The magnetic dipole excitations are well reproduced in the framework of the shell model, however, these calculations cannot describe the observed electric dipole excitations. The $1/2^+$ state at 3060 keV is proposed to be the weak coupling of an $f_{5/2}$ proton hole to the 3^- octupole vibrational state in the $N = 50$ core ^{88}Sr . The relatively strong $E1$ transition from that state to the ground state is explained as mainly the neutron $h_{11/2} \rightarrow g_{9/2}$ transition. The breakup of the $N = 50$ core and neutron excitations into the $ih_{11/2}$ shell are essential to describe electric dipole excitations, but neutron-core excitations do not play an important role for the structure of magnetic dipole excitations.

Polarization Observables in the Reaction $pn \rightarrow d\phi$

(Eur. Phys. J. A 14 (2002) 211)

Kaptari, L.P., **B. Kämpfer**

Abstract: The reaction $pn \rightarrow d\phi$ is studied within a covariant boson exchange model. The behavior of polarization observables being accessible in forthcoming experiments near threshold is predicted.

Testing Mean-Field Models Near the $N = Z$ Line: γ -ray Spectroscopy of the $T_z = \frac{1}{2}$ Nucleus ^{73}Kr

(Phys. Rev. C 65 (2002) 044331)

Kelsall, N.S., S.M. Fischer, D.P. Balamuth, G.C. Ball, M.P. Carpenter, R.M. Clark, J. Durell, P. Fallon, S.J. Freeman, P.A. Hausladen, R.V.F. Janssens, D.G. Jenkins, M.J. Leddy, C.J. Lister, A.O. Macchiavelli, D.G. Sarantites, D.C. Schmidt, D. Seweryniak, C.E. Svensson, B.J. Varley, S. Vincent, R. Wadsworth, A.N. Wilson, A.V. Afanasjev, **S. Frauendorf**, I. Ragnarsson, R. Wyss

Abstract: Excited states in the $N = Z + 1$ nucleus ^{73}Kr have been investigated using the $^{40}\text{Ca}(^{36}\text{Ar}, 2pn)$ and $^{40}\text{Ca}(^{40}\text{Ca}, \alpha 2pn)$ reactions at 145 and 160 MeV, respectively. γ rays were detected using the Gammasphere array and events were recorded in coincidence with charged-particle and neutron detectors. The three previously observed bands were extended to high spin, and a new unfavored positive-parity band has been observed. The alignment characteristics and decay properties of the bands are all consistent with large-deformation prolate rotation, with no clear evidence for oblate bands or shape coexistence. This is quite different from neighboring $^{72,74}\text{Kr}$, indicating a strong shape-stabilizing role for the valence neutron. The experimental results are compared to extended total Routhian surface, cranked Nilsson Strutinsky, and cranked relativistic mean-field calculations. The results suggest that the paired calculations lack some important physics. Neutron-proton correlations may be the missing ingredient. There is also evidence for an unusual band crossing in the negative-parity bands, which may indicate the presence of $T = 0$ pairing correlations. At high spin all the models can reproduce the experimental data.

Dynamical Moment of Inertia and Quadrupole Vibrations in Rotating Nuclei

(Phys. Rev. C 65 (2002) 041307)

Nazmitdinov, R.G., **D. Almeded, F. Dönau**

Abstract: The contribution of quantum shape fluctuations to inertial properties of rotating nuclei has been analyzed within the self-consistent one-dimensional cranking oscillator model. It is numerically proven that for even-even nuclei the dynamical moment of inertia calculated in a mean field approximation in the rotating frame is equivalent to the Thouless-Valatin moment of inertia. If the contribution of the quantum fluctuations to the total energy is taken into account, the dynamical moment of inertia differs from the Thouless-Valatin value.

In-Beam PET Measurements of β^+ Radioactivity Induced by Proton Beams
(Phys. Med. Biol. 47 (2002) 21)

Parodi, K., W. Enghardt, T. Haberer

Abstract: Our first in-beam PET measurements of the β^+ activation induced by proton irradiation are presented. Monoenergetic proton beams in the energy and intensity range suited for the treatment of deep-seated tumours were delivered by the synchrotron of the Gesellschaft fuer Schwerionenforschung (GSI) at Darmstadt. They were stopped in PMMA blocks placed in the centre of the field of view of the positron camera that is installed in the heavy ion tumour treatment facility at GSI. The β^+ activity signal was found to be three times larger than that produced by carbon ions at the same range and applied physical dose. The reconstructed spatial β^+ activity distributions were analysed and compared with the production of positron emitters predicted by a calculation based on experimental cross-sections and on the proton flux given by the FLUKA Monte Carlo code. The shape of the depth-activity profiles was well reproduced by the model and the correlation with the proton range and the depth-dose distributions was carefully investigated. Despite the nontrivial range determination from the β^+ activity distribution in the proton case, our experimental investigation supports the feasibility of an in-situ proton therapy monitoring by means of in-beam PET, as already clinically implemented for the monitoring of carbon ion therapy at GSI Darmstadt.

Observation of a Doublet Band in the Nucleus ^{128}Pr
(Phys. Rev. C 65 (2002) 054324)

Petrache, C.M., G. Lo Bianco, D. Bazzacco, R. Menegazzo, M. Nespolo, G. de Angelis, N. Blasi, V.I. Dimitrov, S. Frauendorf, P. Semmes, J. Zhang

Abstract: The doubly odd nucleus ^{128}Pr was studied via in-beam γ -ray spectroscopy using the $^{40}\text{Ca}+^{92}\text{Mo}$ reaction at 190 MeV. Five rotational bands were observed and assigned to configurations involving proton and neutron orbitals close to the Fermi level. The observed bands are discussed in the framework of the three-dimensional (3D) tilted axis cranking (TAC) model. Two of the negative-parity bands have almost degenerate energy levels, which suggests an interpretation in terms of the pseudospin doublet. It was impossible, however, to reproduce the observed small level spacing by either 3D TAC or two-quasiparticle-rotor model calculations.

From QCD Lattice Calculations to the Equation of State of Quark Matter
(Phys. Rev. D 66 (2002) 094003)

Peshier, A., B. Kämpfer, G. Soff

Abstract: We describe two-flavor QCD lattice data for the pressure at a nonzero temperature and vanishing chemical potential within a quasiparticle model. Relying only on thermodynamic consistency, the model is extended to nonzero chemical potential. The results agree with lattice calculations in the region of a small chemical potential.

β -Decay of ^{100}In
(Phys. Rev. C 66 (2002) 44319)

Plettner, C., L. Batist, J. Döring, A. Blazhev, H. Grawe, V. Belleguic, C.R. Bingham, R. Borcea, M. Gierlik, M. Górska, N. Harrington, Z. Janas, M. Karny, R. Kirchner, C. Mazzocchi, P. Munro, E. Roeckl, K. Schmidt, R. Schwengner

Abstract: The β decay of ^{100}In , the one proton hole and one neutron particle neighbor to ^{100}Sn , was investigated at the GSI on-line mass separator by using germanium detectors and a NaI total-absorption spectrometer. On the basis of $\beta\gamma\gamma$ coincidences, the ^{100}In decay scheme was established for the first time. The ground-state spin and parity for ^{100}In are discussed by investigating β feeding of levels in ^{100}Cd and delayed proton emission to ^{99}Ag . The half-life was remeasured and found to be 5.9(2) s. The Q_{EC} value was determined from the measured EC/β^+ ratio for the β -delayed protons to be 10.08(23) MeV. The main fraction of the β feeding was established to populate the region of 6 MeV excitation energy, which corresponds to a total Gamow-Teller (GT) strength of 3.9(9) and a centroid at 6.4 MeV. Large-scale shell-model calculations employing a realistic interaction are used to assign configurations to states in ^{100}In and ^{100}Cd . The GT β -decay strength distribution measured in the total absorption experiment is compared to shell-model predictions. The deduced overall hindrance of the GT strength agrees with the values predicted for the ^{100}Sn GT decay.

High-Spin Structure of the Spherical Nucleus ^{90}Y

(Phys. Rev. C 65 (2002) 044327)

Rainovski, G., **R. Schwengner**, **K.D. Schilling**, **A. Wagner**, A. Jungclaus, E. Galindo, O. Thelen, D.R. Napoli, C.A. Ur, G. de Angelis, M. Axiotis, A. Gadea, N. Marginean, T. Martinez, Th. Kröll

Abstract: High-spin states in ^{90}Y were populated in the $^{82}\text{Se}(^{11}\text{B},3n)$ reaction at a beam energy of 37 MeV. γ rays were detected with the spectrometer GASP. The level scheme of ^{90}Y was extended up to $J^\pi = (18^+)$ at 9.6 MeV. Mean lifetimes of four levels were determined using the Doppler-shift-attenuation method. The structure of ^{90}Y was interpreted in terms of the shell model. The calculations were performed in the model space $\pi(0f_{5/2}, 1p_{3/2}, 1p_{1/2}, 0g_{9/2}) \nu(1p_{1/2}, 0g_{9/2}, 1d_{5/2})$ and in an extended space including the $\nu(0g_{7/2})$ orbital also. The calculations in the extended model space reveal a correspondence between states in ^{90}Y and ^{89}Y . Moreover, a combination of the predicted states with $J^\pi \geq 14^{(+)}$ can be found that reproduces the large experimental B(M1) values of up to about 1 Weisskopf unit.

Tilted Dipole Bands in ^{123}Xe

(Phys. Rev. C 66 (2002) 014308)

Rainovski, G., D.L. Balabanski, **G. Roussev**, G. Lo Bianco, G. Falconi, N. Blasi, D. Bazzacco, G. de Angelis, D.R. Napoli, **F. Döna**, **V.I. Dimitrov**

Abstract: High-spin states in ^{123}Xe were populated in the $^{110}\text{Pd}(^{18}\text{O},5n)$ reaction at 75 MeV and gamma-ray coincidences were measured with the GASP spectrometer. A new rotational sequence of enhanced dipole transitions was established. This band, as well as a similar band in ^{124}Xe , may be described within the framework of the tilted axis cranking model as bands for which comparable amounts of angular momentum are generated by magnetic and collective rotation, respectively.

Shape Coexistence at High Spin in the $N = Z + 2$ Nucleus ^{70}Se

(J. Phys. G 28 (2002) 2617)

Rainovski, G., H. Schnare, R. Schwengner, C. Plettner, L. Käubler, F. Döna, I. Ragnarsson, J. Eberth, T. Steinhardt, O. Thelen, M. Hausmann, A. Jungclaus, K.P. Lieb, A. Müller, G. de Angelis, A. Gadea, D.R. Napoli, A. Algora, D.G. Jenkins, R. Wadsworth, A. Wilson, W. Andrejtscheff, **V.I. Dimitrov**

Abstract: The nucleus ^{70}Se was studied using the $^{40}\text{Ca}(^{40}\text{Ca}, 2\alpha 2p)$ reaction at a beam energy of 185 MeV. Gamma rays were measured with the EUROBALL III spectrometer. The known positive-parity bands have been extended and one new band of positive parity and two of negative parity have been identified. These bands are interpreted in terms of the cranked Nilsson-Strutinsky approach. Calculations suggest that the two negative-parity bands, which have the same signature, are both based on a configuration with two protons and three neutrons lifted from the fp shell to the $g_{9/2}$ orbital, but at different nuclear shapes. This represents a shape coexistence at high spin.

Radiotherapy for Chordomas and Low-Grade Chondrosarcomas of the Skull Base with Carbon Ions

(Int. J. Radiation Oncology Biol. Phys. 53 (2002) 36)

Schulz-Ertner, D., T. Haberer, O. Jäkel, C. Thilman, M. Krämer, **W. Enghardt**, G. Kraft, M. Wannemacher, J. Debus

Abstract: Purpose: Compared to photon irradiation, carbon ions provide physical and biologic advantages that may be exploited in chordomas and chondrosarcomas.

Methods and Materials: Between August 1998 and December 2000, 37 patients with chordomas ($n = 24$) and chondrosarcomas ($n = 13$) were treated with carbon ion radiotherapy within a phase I/II trial. Tumor conformal application of carbon ion beams was realized by intensity-controlled raster scanning with pulse-to-pulse energy variation. Three-dimensional treatment planning included biologic plan optimization. The medium tumor dose was 60 GyE (GyE = Gy x relative biologic effectiveness).

Results: The mean follow-up was 13 month. The local control rate after 1 and 2 years was 96 % and 90 %, respectively. We observed 2 recurrences outside the gross tumor volume in patients with chordomas. Progression-free survival was 100 % for chondrosarcomas and 83 % for chordomas at 2 years. Partial remission after carbon therapy was observed in 6 patients. Treatment toxicity was mild.

Conclusion: These are the first data demonstrating the clinical feasibility, safety, and effectiveness of scanning beam delivery of ion beams in patients with skull base tumors. The preliminary results in patients with skull base chordomas and low-grade chondrosarcomas are encouraging, although the follow-up was too short to draw definite conclusions concerning outcome. In the absence of major toxicity, dose escalation might be considered.

Magnetic and Collective Rotation in ^{79}Br

(Phys. Rev. C 65 (2002) 044326)

Schwengner, R., F. Dönau, T. Servene, H. Schnare, J. Reif, G. Winter, **L. Käubler, H. Prade,** S. Skoda, J. Eberth, H. G. Thomas, F. Becker, B. Fiedler, S. Freund, S. Kasemann, T. Steinhardt, O. Thelen, T. Härtlein, C. Ender, F. Köck, P. Reiter, D. Schwalm

Abstract: Excited states of the nucleus ^{79}Br were investigated via the reaction $^{76}\text{Ge}(^{7}\text{Li}, 4n)$ at a beam energy of 35 MeV. Coincidence data of emitted γ rays were measured with an arrangement of six EUROBALL CLUSTER detectors. The $E2$ bands built on the $9/2^+$ and $3/2^-$ states were extended up to $J = 37/2$ at $E \approx 8.8$ MeV. The $M1$ band starting with a $15/2^-$ state at 2.6 MeV was observed up to $J = (29/2)$ at $E = 6.4$ MeV. Crossover $E2$ transitions within this band were observed for the first time. Mean lifetimes of 17 levels were deduced using the Doppler-shift-attenuation method. The $M1$ band can be described within the tilted-axis-cranking model on the basis of the tilted three-quasiparticle configuration $\pi(g_{9/2})\nu(g_{9/2})\nu(fp)$ which has a triaxial shape. This band appears as a mixed case including contributions of both magnetic and collective rotation.

Magnetic Rotation in ^{82}Rb and ^{84}Rb

(Phys. Rev. C 66 (2002) 024310)

Schwengner, R., G. Rainovski, H. Schnare, **A. Wagner, F. Dönau,** A. Jungclaus, M. Hausmann, O. Iordanov, K.P. Lieb, D.R. Napoli, G. de Angelis, M. Axiotis, N. Marginean, F. Brandolini, C. Rossi Alvarez

Abstract: High-spin states in ^{82}Rb and ^{84}Rb were populated in the reaction $^{11}\text{B} + ^{76}\text{Ge}$ at beam energies of 45 and 50 MeV. γ rays were detected with the spectrometer GASP. The level schemes of ^{82}Rb and ^{84}Rb were extended up to 6.0 and 7.4 MeV, respectively. Mean lifetimes of five levels in ^{82}Rb and eleven levels in ^{84}Rb were determined using the Doppler-shift-attenuation method. Regular magnetic dipole bands including strong $M1$ and weak $E2$ transitions observed in both nuclei show the characteristic features of magnetic rotation. These bands have been successfully described in the tilted-axis cranking model on the basis of the four-quasiparticle configuration $\pi(fp) \pi(g_{9/2}^2) \nu(g_{9/2})$. The calculations reproduce the band-like properties as well as absolute $B(M1)$ and $B(E2)$ transition strengths in both nuclei, which supports the concept of magnetic rotation. Excited states in ^{84}Rb were also interpreted in terms of the shell model using the model space $\pi(0f_{5/2}, 1p_{3/2}, 1p_{1/2}, 0g_{9/2}) \nu(1p_{1/2}, 0g_{9/2})$. The predictions for low-lying states agree in general with the experiment. Moreover, calculated states with the main configuration $\pi(0f_{5/2}^{-2} 1p_{3/2}^{-1} 0g_{9/2}^2) \nu(0g_{9/2}^{-3})$ can be combined into $M1$ sequences which reproduce roughly the experimental transition strengths. However, these sequences do not show the features of magnetic rotation such as regular level spacings and $B(M1)$ values which decrease with increasing rotational frequency.

Charge-Exchange Reaction $pD \rightarrow n(pp)$ in the Bethe-Salpeter Approach

(Yad. Fiz. 65 (2002) 469)

Semikh, S.S., S.M. Dorkin, L.P. Kaptari, **B. Kämpfer**

Abstract: The deuteron charge - exchange reaction $pD \rightarrow n(pp)$ for the low values of momentum transfer and small excitation energies of final pp - pair is considered in the framework of Bethe-Salpeter approach. The method of calculation of the observables is developed for the case, when the pp-pair is in 1S_0 -state. The methodical numerical calculations of the differential cross sections and tensor analysing powers are presented. The reaction under consideration is predicted to be a solid base for construction of the deuteron tensor polarimeter at high energies, and also to obtain some additional information about elementary nucleon-nucleon charge-exchange amplitude.

Structure of High-Spin States in ^{91}Sr and ^{92}Sr

(Phys. Rev. C 65 (2002) 034323)

Stefanova, E.A., M. Danchev, **R. Schwengner,** D.L. Balabanski, M.P. Carpenter, M. Djongolov, S.M. Fischer, D.J. Hartley, R.V.F. Janssens, W.F. Mueller, D. Nisius, W. Reviol, L.L. Riedinger, O. Zeidan

Abstract: The nuclei ^{91}Sr and ^{92}Sr were produced at high spin as fission fragments following the fusion reaction $^{36}\text{S} + ^{159}\text{Tb}$ at 165 MeV. γ rays were detected with the Gammasphere array. The level schemes of ^{91}Sr and ^{92}Sr were extended up to $E \approx 6$ MeV and $E \approx 8$ MeV, respectively. Level structures in ^{91}Sr and ^{92}Sr were interpreted in shell-model calculations performed in the configuration space $(0f_{5/2}, 1p_{3/2}, 1p_{1/2}, 0g_{9/2})$ for the protons and $(1p_{1/2}, 0g_{9/2}, 1d_{5/2})$ for the neutrons. Negative-parity states in the yrast sequences are described in these calculations by coupling 3^- proton excitations to the unpaired $1d_{5/2}$ neutrons. A possible reduction of the gap between the proton $1p_{3/2}$ and $1p_{1/2}$ orbitals in ^{92}Sr is discussed.

Kaon and Antikaon Production in Dense Nuclear Matter

(J. Phys. G 28 (2002) 1895)

C. Sturm for the KaoS Collaboration; I. Böttcher, M. Debowski, A. Förster, **E. Grosse**, P. Koczon, B. Kohlmeyer, F. Laue, M. Mang, **L. Naumann**, H. Oeschler, F. Pühlhofer, E. Schwab, P. Senger, Y. Shin, J. Speer, H. Ströbele, C. Sturm, G. Surowka, F. Uhlig, **A. Wagner**

Abstract: The production and propagation of kaons and antikaons in relativistic heavy-ion collisions have been systematically investigated with the Kaon spectrometer at SIS/GSI. Experimental results on the K^+ and K^- yield and on the azimuthal emission pattern of K^+ mesons are presented. Within the framework of transport models the data can be explained assuming in-medium kaon-nucleon potentials. The comparison of K^+ production excitation functions obtained for Au + Au and C + C collisions with results of transport model calculations favours a soft nuclear equation-of-state.

Production of ω and ϕ Mesons in Near-Threshold πN Reactions: Baryon Resonances and the Okuba-Zweig-Iizuka Rule

(Phys. Rev. C 65 (2002) 065202)

Titov, I.A., **B. Kämpfer**, B.L. Reznik

Abstract: Results of a combined analysis are presented for the production of ω and ϕ mesons in πN reactions in the near-threshold region using a conventional "nonstrange" dynamics based on processes that are allowed by the nonideal ω - ϕ mixing. We show that the interferences of the t channel (meson exchange) and s , u channels (nucleon and nucleon-resonances) differ significantly for the ω and ϕ production amplitudes. This leads to a decrease of the relative yields, in comparison with the expectations based on a one-component amplitude with standard ω - ϕ mixing. We find a strong and nontrivial difference between observables in ω and ϕ production reactions caused by the different roles of the nucleon and nucleon-resonance amplitudes. A series of predictions for the experimental study of this effect is presented.

Quadrupole Moment of the 11^- Intruder Isomer in ^{196}Pb and Its Implications for the 16^- Shears Band Head

(Phys. Rev. Lett. 88 (2002) 102502)

Vyvey, K., S. Chmel, G. Neyens, H. Hubel, D.L. Balabanski, D. Borremans, N. Coulier, R. Coussement, G. Georgiev, N. Nenoff, S. Panchohi, D. Rossbach, **R. Schwengner**, S. Teughels, **S. Frauendorf**

Abstract: The quadrupole moment of the 11^- isomer in ^{196}Pb has been measured by the level mixing spectroscopy method. This state has a $\pi(3s_{1/2}^{-2}1h_{9/2}1i_{13/2})11^-$ configuration which is involved in most of the shears band heads in the Pb region. The first directly measured value of $Q_s(11^-) = (-)3.41(66)$ b, coupled to the previously known quadrupole moment of the $\nu(1i_{13/2}^{-2}12^+)$ isomer allows us to estimate the quadrupole moment of the 16^- shears band head as $Q_s(16^-) = -0.32(10)$ b. The experimental values are compared to tilted axis cranking calculations, giving insight into the validity of the additivity approach to couple quadrupole moments and on the amount of deformation in the shears bands.

Novel Features of the Fragment Mass Variance in Fission of Hot Nuclei

(Physics of Atomic Nuclei, Vol. 65, Nr.8 (2002) 1403)

Wagner, W., I.I. Gotchar, A.E. Gettinger, L.A. Litnevsky, H.-G. Ortlepp, D.V. Kamanin

Abstract: Basing on data obtained by the incomplete fusion reactions ^7Li (43 A MeV) + ^{232}Th and ^{14}N (34 A MeV) + ^{197}Au , the energy dependence of the variance of the fragment mass in fission of highly heated nuclei has been investigated for total excitation energies ranging from 50 up to 350 MeV. This dependence shows some unexpected features when the total excitation energy exceeds a value of about 70 MeV. After this value the steady increase of the variance expected from its temperature dependence changes to some kind of plateau between 100 and 200 MeV. Further on, at energies in excess of about 250 MeV, the variance is found to increase again sharply. In order to analyze this behaviour quantitatively, a dynamical stochastic model has been developed. The model employs the one-body dissipation mechanism and describes the decay of highly excited and rotating nuclei by fission and light particle evaporation. It satisfactorily explains the measured prior-to-scission neutron multiplicities and the experimental mass variances up to an energy of about 250 MeV, but the stochastic treatment does not reveal any increase at higher excitation energies in contradiction with the data.

Production of ϕ Mesons in Subthreshold Heavy-Ion Collisions

(J. Phys. G 28 (2002) 2133)

Zétényi, M., **H.W. Barz**, Gy. Wolf, **B. Kämpfer**

Abstract: Within a BUU type transport model we study ϕ meson production in subthreshold Ni+Ni and Ru+Ru reactions. For the first time we included in our model the elementary reaction channels $\rho + N, \Delta \rightarrow \phi + N$, $\pi + N(1520) \rightarrow \phi + N$ and $\pi\rho \rightarrow \phi$. In spite of a substantial increase of the ϕ multiplicities by these channels our results stay significantly below the preliminary experimental data.

Evaluation of QCD sum rules for light vector mesons at finite density and temperature

(Eur. Phys. J. A 15 (2002) 529)

Zschocke, S., O.P. Pavlenko, **B. Kämpfer**

Abstract: QCD sum rules are evaluated at finite nucleon densities and temperatures to determine the change of mass parameters for the lightest vector mesons ρ , ω and ϕ in a strongly interacting medium. For conditions relevant for the starting experiments at HADES we find that the in-medium mass shifts of the ρ and ω mesons are governed, within the Borel QCD sum rule approach, by the density and temperature dependence of the four-quark condensate. In particular, the variation of the strength of the density dependence of the four-quark condensate reflects directly the decreasing mass of the ρ meson and can lead to a change of the sign of the ω meson mass shift as a function of the density. In contrast, the in-medium mass of the ϕ meson is directly related to the chiral strange quark condensate which seems correspondingly accessible.

Renormalization of the Two-Photon Vacuum Polarization and the Self Energy Vacuum Polarization for a Tightly Bound Electron

(Eur. Phys. J. D 19 (2002) 147)

Zschocke, S., G. Plunien, G. Soff

Abstract: The renormalization method of Bogoljubov-Parasiuk-Hepp-Zimmermann (BPHZ) is used in order to derive the renormalized energy shift due to the gauge invariant Källén-Sabry diagram of the two-photon vacuum polarization (TPVP) as well as the self energy vacuum polarization S(VP)E beyond the Uehling approximation. It is outlined, that no outer renormalization is required for the two-photon vacuum polarization and that only the inner renormalization has to be accomplished. It is shown that the so-called nongauge invariant spurious term is absent for a wide class of vacuum polarization (VP) diagrams if one applies the widely used spherical expansion of bound and free-electron propagator. This simplifies significantly calculations in bound state quantum electrodynamics. As one result of our paper the use of the BPHZ-approach in bound state QED is established.

Proceedings and Reports

Afanasjev, A. V., **S. Frauendorf**, P. Ring

Rotating nuclei in the relativistic mean field theory: Microscopic nature of nuclear magnetism

Proceedings of the NATO Advanced Research Workshop on "The Nuclear Many-Body Problem 2001", Brijuni, Pula, Croatia, 2001, Eds. W. Nazarewicz and D. Vretenar, NATO Science Series II - Mathematics, Physics and Chemistry (Kluwer Academic Publishers) v. 53 (2002) 103 - 111

Altstadt, E., C. Beckert, H. Freiesleben, V. Galindo, **E. Grosse**, B. Naumann

Design of a photoneutron source for time-of-flight experiments at the radiation source ELBE

Proceedings of the International Workshop "Fast Neutron Physics" TU Dresden, Germany, September 5-7, 2002

Barz, H.W.

HBT radii for an opaque source at RHIC engines

Proc. Int Workshop XXX on Gross Properties of Nuclei and Nuclear Excitations on Ultrarelativistic Heavy Ion Collisions, Hirschegg, Austria, Jan. 13 - 19, 2002, p. 217

- Cleymans, J., **B. Kämpfer**, S. Wheaton
Towards Strangeness Saturation in Central Heavy Ion Collisions at High Energies
16. International Conference on Ultrarelativistic Nucleus-Nucleus Collisions
Quark Matter 2002 (QM 2002), Nantes, France, July 18 - 24, 2002
- Dekorsy, Th., **E. Grosse**, M. Helm, **W. Seidel**, **D. Wohlfarth**, A. Wolf, **R. Wünsch**
A Transport and Diagnostic System for the IR Beam of ELBE
24. FEL-Konferenz and User Workshop, Chicago, USA, Sept. 9 - 13, 2002, USA, Poster and Proceedings
- Enghardt, W.**, **K. Parodi**, **J. Pawelke**, **F. Pönisch**, T. Haberer, M. Krämer, D. Schardt
Positronen Emissions Tomographie für die Qualitätssicherung bei der Schwerionentherapie
Deutsche Physikalische Gesellschaft, Abstracts der Frühjahrstagungen 2002,
<http://www.dpg-tagungen.de/archive/2002>
- Enghardt, W.**, **P. Crespo**, **F. Fiedler**, **K. Parodi**, **J. Pawelke**, **F. Pönisch**, T. Haberer, C. Kausch, M. Krämer, D. Schardt
Positron emission tomography for quality assurance of carbon ion therapy
Book of Abstracts, XXXVI Meeting of the Particle Therapy Co-Operative Group, Catania, Italy, May 29 - 31, 2002
- Fahmy, K.**, **G. Furlinski**, **P. Gippner**, **E. Grosse**, **H. Piest**, **M. Szepan**, **W. Seidel**, **D. Wohlfarth**, A. Wolf, **R. Wünsch**
Properties and the planned use of the intense THz radiation from ELBE at Dresden-Rossendorf
Poster and Proceedings Tera-Hertz Radiation in Biological Research, Investigation on Diagnostics, and Study on Potential Genotoxic Effects, Workshop Capri, Sept. 29 - Oct. 2, 2002, Italy
- Gallmeister, K.**, **B. Kämpfer**, O.P. Pavlenko
Energy Loss of Quarks in Deconfined Matter at RHIC: Photon Tagged Jets, Single Electron and Dilepton Spectra from Open Charm
16. International Conference on Ultrarelativistic Nucleus-Nucleus Collisions,
Quark Matter 2002 (QM 2002), Nantes, France, July 18 - 24, 2002, nucl-th/0208006
- Hietschold, V., T. Kittner, S. Appold, N. Abolmaali, **K. Parodi**, M. Laniado
MR perfusion measurement in contrast uptaking lesions: comparison of three correction levels
19. Annual Meeting of the European Society for Magnetic Resonance in Medicine and Biology, August 22 - 25, 2002, Cannes, France
- Kamanin, D.V., V.S. Salamatin, **W. Wagner**, H. Freiesleben
The new Parameter for Separation of Binary Reaction Mechanisms in Heavy-Ion Collisions
Int. Symp. on Exotic Nuclei, Lake Baikal, Russia (2001), Conf. Proceed., Ed. Yu. E. Penionzhkevich, E. A. Cherpanov, World Scientific Pub. C. Pte. Ltd. (2002) p. 235
- Kämpfer, B.**, J. Cleymans, **K. Gallmeister**, S. Wheaton
Centrality Dependence of Thermal Parameters in Heavy Ion Collisions at SPS and RHIC
30. International Workshop on Gross Properties of Nuclei and Nuclear Excitation, Hirschegg 2002, Jan. 13 - 19, 2002,(Eds.) M. Buballa et al., p. 158
- Kämpfer, B.**, J. Cleymans, **K. Gallmeister**, S.M. Wheaton
Thermal Parameters in Heavy Ion Collisions at SPS and RHIC: Centrality Dependence
International Workshop on Quark and Hadron Dynamics, Budapest, Hungary, March 3 - 7, 2002, (Ed.) P. Levar, p. 213
- Kämpfer, B.**, A. Peshier, G. Soff
Quasi-particle Model for Deconfined Matter
5. International Conference on Quark Confinement and the Hadron Spectrum
Gargnano, Brescia, Italy, Sept. 10 - 14, 2002, hep-ph/0212179
- Kämpfer, B.**, A.I. Titov, B.L. Reznik
Baryon Resonance Dynamics in $\pi N \rightarrow N V$ Reactions near Threshold
16. International Conference on Particles and Nuclei (PANIC 02),
Osaka, Japan, Sept. 30 - Okt. 4, 2002

Kitagawa, A., M. Endo, M. Hosaka, T. Kanai, M. Kanazawa, S. Koda, S. Minohara, T. Murakami, K. Noda, M. Suda, T. Tomitani, M. Torikoshi, E. Urakabe, S. Yamada, K. Yoshikawa, H. Mizuno, T. Nishio, M. Shinbo, Y. Futami, **J. Pawelke**, K. Hanawa, Y. Iseki, K. Sato, M. Mizota, M. Hirata, A. Komiyama
Radioactive Beam Project at HIMAC
Proceedings of the 2. Asian Particle Accelerator Conference, Beijing, China Sept. 17 - 21, 2001, 800-802
Report National Institute of Radiological Sciences, Chiba, Japan, HIMAC-044 (Dec 2001) 26 - 28

Kotte, R., B. Kämpfer

Acceptance and Count Rate Estimates for Experiments on Subthreshold Phi Meson Production in Central Collisions of C + C at 2 AGeV
Wiss. Tech. Ber. FZR-339 (2002)

Loos, M.J. de, C.A.J. van der Geer, S.B. van der Geer, A.F.G. van der Meer, D. Oepts, **R. Wunsch**
A 3D Particle Tracking Technique for FEL Start-Up and Saturation Effects
24. Int. Conf on Free Electron Lasers, Argonne (USA) Sept. 2002
Poster and Proceedings

Parodi, K., W. Enhardt, T. Haberer

The potential of in-beam PET for proton therapy monitoring: first experimental investigation
Verhandlungen der DPG, HK48.7, Physikertagung, Münster, March 11 - 15, 2002

Parodi, K., W. Enhardt, T. Haberer

Experimental investigation of the potential in-beam PET for proton therapy monitoring
DPG-Tagung, Leipzig, March 18 - 22, 2002

Parodi, K., W. Enhardt, T. Haberer

Experimental investigation of the potential in-beam PET for proton therapy monitoring
PTCOG XXXVI, Catania, Italy, Book of Abstracts (2002) 12, May 29 - 31, 2002

Parodi, K., W. Enhardt, T. Haberer

The potential of in-beam positron-emission-tomography for proton therapy monitoring: first phantom experiments
IEEE Nuclear Science Symposium Medical Imaging Conference NSS-MIC 2002, Norfolk, Virginia, USA, Conference Records, Nov. 10 - 16, 2002

Semikh, S.S., L.P. Kaptari, S.M. Dorkin, **B. Kämpfer**

Final State Interaction within the Bethe-Salpeter Approach in Charge Exchange $PD \rightarrow N(PP)$ Process
16. International Baldin Seminar on High-Energy Physics Problems:
Relativistic Nuclear Physics and Quantum Chromodynamics (ISHEPP 16),
Dubna, Russia, June 10 - 15, 2002, nucl-th/0209087

Spekl, K., D. Slonina, K. Brankovic, C. Hoinkis, **A. Panteleeva, J. Pawelke, W. Dörr**

Mikronukleus-Induktion in Keratinozyten und Fibroblasten nach Bestrahlung mit weichen Röntgenstrahlen
11. Symposium "Experimentelle Strahlentherapie und Klinische Strahlenbiologie" Dresden, Feb. 21 - 23, 2002
Exp. Strahlenther. Klin. Strahlenbio. **11** (2002) 135-139 (ISSN 1432-864X)

Tishchenko, V.G., C.-M. Herbach, D. Hilscher, H.-G. Orllepp, **P. Gippner, D.V. Kamanin, Yu.E. Penionzhkevich, K.-D. Schilling, W. Wagner**

Ternary Decay of Hot Heavy Nuclei studied in the Reaction $^{40}\text{Ar}(36\text{A MeV})+^{248}\text{Cm}$
Internat. Symp. on Exotic Nuclei, Lake Baikal, Russia (2002), Conf. Proceed., ed. Yu. E. Penionzhkevich, E. A. Cherepanov, World Scientific E. Pte. Ltd.(2002) p. 167

Zschocke S., B. Kämpfer, O.P. Pavlenko, G. Wolf

Evaluation of QCD Sum Rules for HADES
40. International Winter Meeting on Nuclear Physics, Bormio, Italy, Jan. 21 - 26, 2002
(Eds.) I. Iori, A. Moroni, p. 102

Theses

Johann Arend (Hans) Piest

Exciting Polycyclic Aromatic Hydrocarbon Vibrations (Infrared absorption spectroscopy of astrophysically relevant jet-cooled neutral and cationic polycyclic aromatic hydrocarbons)

University of Nijmegen, Mai 2002

Olesya Savchuk

Combination of PMFTIRRAS mapping and SPR imaging technique for investigation of SAM formed from phosphonic acid

TU Dresden, November 2002

Talks at Conferences and other Institutes

Barz, H.W.

HBT Radii for an Opaque Source at RHIC Energies
Proc. Int. Workshop XXX on Gross Properties of Nuclei and Nuclear
Excitations on Ultrarelativistic Heavy-Ion Collisions, Hirschegg,
Austria, Jan. 13 - 19, 2002

Barz, H.W.

K^+ , K^- , ϕ Mesons in Nuclear Matter
ANKE Collaboration Meeting, Jülich, April 10 - 12, 2002

Barz, H.W.

Kaon Production Analysed in the Rossendorf-Budapest BUU code
Antikaon-Workshop, Rossendorf, June 3 - 4, 2002

Dohrmann, F.

Electroproduction of Strangeness on Light Nuclei
Baryons 2002, 9th International Conference on the Structure of Baryons, Jefferson Laboratory, Newport News,
USA, March 7, 2002

Dohrmann, F.

Electroproduction of Strangeness on Light Nuclei
Group Report at Nuclear Physics Spring Meeting of DPG (Germany),
NNV (Netherlands) and BNN/SBP (Belgium), Münster, March 14, 2002

Dohrmann, F.

Elektroproduktion von Strangeness an leichten Kernen:
Gebundene Hyperon-Nukleon-Zustände und quasifreie Verteilungen
Institutsseminar, Institut für Kern- u. Teilchenphysik der TU Dresden, April 7, 2002

Dohrmann, F.

Hyperon-Nucleon Boundstates and Electroproduction of Strangeness on Light Nuclei
Invited seminar, INFN-LNF Frascati, Rom, Italy, May 2, 2002

Dohrmann, F.

Hyperon-Nucleon Boundstates and Electroproduction of Strangeness on Light Nuclei
Meson 2002, 7th International Workshop on Meson Production, Properties and Interaction, Cracow, Poland, May
25, 2002

Dohrmann, F.

Electroproduction of Strangeness on Light Nuclei
Invited seminar, Bonn University, Institut für Strahlen- u. Kernphysik, July 4, 2002

Dohrmann, F.

The HADES Experiment at GSI: Status Report
Invited seminar, Workshop on Effective theories of strongly interacting matter, Manchester, UK, July 16, 2002

Dohrmann, F.

Electroproduction of Strangeness on Light Nuclei
Workshop International School of Nuclear Physics in Erice, Sicily, 24th course, Quarks in Hadrons and Nuclei,
Sep. 17, 2002

Dohrmann, F.

Electroproduction of Strangeness on Light Nuclei
Kolloquium im Graduiertenkolleg II., Physikalisches Institut Giessen Universität, Nov. 21, 2002

Enghardt, W.

In-situ Therapy Monitoring by Mean of Positron Emission Tomography
Initial ENLIGHT Workshop, CERN, Genf, Switzerland, Feb. 12, 2002

Enghardt, W.

Positron Emissions Tomographie für die Qualitätssicherung bei der Schwerionentherapie
Frühjahrstagung der DPG, Fachverband Strahlenphysik und Strahlenwirkung, Leipzig, March 19, 2002

Enghardt, W.

Positron Emission Tomography for Quality Assurance of Carbon Ion Therapy
PTCOG XXXVI, Catania, Italy, May 29, 2002

Enghardt, W.

Radiotherapie mit Photonen, Elektronen und schweren geladenen Teilchen
Lecture course, Fakultät Elektrotechnik der TU Dresden, June 27, 2002

Enghardt, W.

Beschleuniger in der Medizin
Heraeus-Ferienkurs für Physik, Dresden, Sep. 16 - 27, 2002

Enghardt, W.

Tumorthherapie mit Ionenstrahlen
Physikalisches Kolloquium der Martin-Luther-Universität Halle, Wittenberg, Dec. 5, 2002

Fahmy, K.

FTIR- and Fluorescence-Spectroscopic Investigation of Drug Action on Signalling by a Prototypical G-Protein-Coupled Receptor
First international conference on biomedical spectroscopy, Cardiff, Great Britain, July 7 - 10, 2002

Fahmy, K.

FTIR-Spectroscopic Investigation of Protein Conformational Changes and Drug Action in a G-Protein-Coupled Receptor
THz-Bridge Workshop, Capri, Italy, Sep. 29. - Oct. 2, 2002

Fahmy, K.

Uran-bindende Proteine: Gewässerreinigung mit biologischen Mitteln
Bruker-Anwender-Treffen, Ettlingen, Deutschland, Nov. 11, 2002

Frauendorf, S.

Quantum Mechanics II
Graduate course at University of Notre Dame,
Indiana, USA, spring 2002

Frauendorf, S.

Left-Handed Nuclei
International Conference on Frontiers of Nuclear Structure,
Berkeley, July 28 - August 2, 2002

Frauendorf, S.

Electricity and Magnetism
Undergraduate course at University of Notre Dame, Indiana, USA, fall 2002

Frauendorf, S.

Chirality of Nuclear Rotation
Third International Conference on Fission and Neutron-Rich Nuclei,
Sanibel Island, Florida, Nov. 3 - 9, 2002

Frauendorf, S.

Proton-Neutron Pair Correlations in $N = Z$ Nuclei Nuclear
Physics Division, Argonne National Laboratory, USA, Dec. 16, 2002

Gippner, P.

The Radiation Source ELBE and the FEL Facilities
VIK Dubna, Flerov Laboratory of Nuclear Reactions, April 8, 2002

Kämpfer, B.

General Relativity
Lecture course, TU Dresden, Wintersemester 2001/2002

Kämpfer, B.

Centrality Dependence of Thermal Parameters in Heavy Ion Collisions at SPS and RHIC
30th International Workshop on Gross Properties of Nuclei and Nuclear Excitation:
Hirschegg 2002: Ultrarelativistic Heavy Ion Collisions, Hirschegg, Germany, Jan. 13 - 19, 2002

Kämpfer, B.

Evaluation of QCD Sum Rules for HADES
40th International Winter Meeting on Nuclear Physics, Bormio, Italy, Jan. 21 - 26, 2002

Kämpfer, B.

Thermal Parameters in Heavy Ion Collisions at SPS and RHIC: Centrality Dependence
International Workshop on Quark and Hadron Dynamics in Relativistic Heavy Ion Collisions, Budapest, Hungary,
March 3 - 7, 2002

Kämpfer, B.

Isoscalar-Isovector Interference in πN Reactions
HADES collaboration meeting, Smolenice, April 11 - 14, 2002

Kämpfer, B.

QCD Sum Rules
Seminar, Universität Tübingen, April 25, 2002

Kämpfer, B.

Quasi-Particle Model of Baryon-Dense Plasma
Workshop Compressed Baryonic Matter, GSI Darmstadt, May 13 - 16, 2002

Kämpfer, B.

Energy Loss of Quarks in Deconfined Matter at RHIC: Photon-Tagged
Jets, Single Electron and Dilepton Spectra
Quark Matter 2002, Nantes, France, July 18 - 25, 2002

Kämpfer, B.

Quasiparticle Model for a Deconfined Baryon-Dense Plasma
Conference on "Quark Confinement and the Hadron Spectrum V",
Gargnano, Italy, Sep. 10 - 14, 2002

Kämpfer, B.

Baryon Resonance Dynamics on $\pi N \rightarrow NV$ Reactions near Threshold
PANIC 02, Osaka, Japan, Sep. 30 - Oct. 4, 2002

Kämpfer, B.

Unser Universum: Vergangenheit und Zukunft
Samstagsvorlesung, TU Dresden, Nov. 16, 2002

Kämpfer, B.

Gauge Field Theory
Lecture course, TU Dresden, Winter Semester 2002/03

Kanaki, K.

HADES Drift Chambers MDC III
Nuclear Physics Spring Meeting of DPG (Germany), NNV(Netherlands) and BNN/SBP (Belgium), Münster,

March 11 - 15, 2002

Kanaki, K.

Status of MDC Plane III Production at FZ-Rossendorf
XI HADES Collaboration Meeting, Smolenice, April 12, 2002

Kotte, R.

Status Report on the Outer Plastic Well
FOPI collaboration meeting, Darmstadt, March 21 - 22, 2002

Kotte, R.

Study of phi Meson Production in C + C at E = 2 AGeV
HADES collaboration meeting, Smolenice, April 11 - 14, 2002

Kotte, R.

Progress Report on FOPI's Phi Meson Analyses
FOPI collaboration meeting, Trakoscan, Croatia, Sep. 26 - 28, 2002

Möller, K.

The Rossendorf Dresden 40 MeV Electron Accelerator (ELBE radiation source) and its Experimental Program
FFLEEP Workshop, Trento, Dec. 4 - 7, 2002

Neubert, W.

Comparison of Radiation Transport Codes on Electromagnetic
Interactions and Neutron Production in the MeV Region
NEG user group meeting, Stoke-on-Trent, England, April 22 - 23, 2002

Panteleeva, A., S. Pieck, K. Spekl, H. Thiele

Biologische Wirksamkeit niederenergetischer Teilchen und Röntgenstrahlen
Seminar "Strahlenbiologie und Experimentelle Radioonkologie", TU Dresden, Klinik und Poliklinik für Strahlen-
therapie und Radioonkologie, Jan. 8, 2002

Panteleeva, A., S. Pieck, K. Spekl, H. Thiele

Klonogenes Zellüberleben und Chromosomenschaden bei Keratinozyten und Fibroblasten nach Bestrahlung mit
25 kV und 200 kV Röntgenstrahlen
Seminar "Strahlenbiologie und Experimentelle Radioonkologie", TU Dresden, Klinik und Poliklinik für Strahlen-
therapie und Radioonkologie, Jan. 8, 2002

Panteleeva, A.

Current status of preparation of RBE measurement at ELBE
Seminar TU Dresden, Institut für Strahlenschutzphysik, June 27, 2002

Parodi, K.

PET imaging for the Monitoring of Carbon Ion Therapy and Potential Application to Proton Therapy
University of Milano, Bicocca and TERA Foundation, Milano, Italy, Jan. 14, 2002

Parodi, K.

The Potential of In-Beam PET for Proton Therapy Monitoring: First Experimental Investigation
Frühjahrstagung der DPG, Fachverband Physik der Hadronen und Kerne, Münster, March 14, 2002

Parodi, K.

Experimental Investigation of the Potential of In-Beam PET for Proton Therapy Monitoring
Frühjahrstagung der DPG, Fachverband Strahlenphysik und Strahlenwirkung, Leipzig, March 19, 2002

Parodi, K.

Positron Emission Tomography for Quality Assurance of Carbon Ion Therapy
XXXVI Meeting of the Particle Therapy Co-Operation Group, Catania, Italy, May 29, 2002

Parodi, K.

Radiotherapy with Hadron Beams

20 lectures given at the University of Ferrara, Physics Dept., as complementary course to the course of Medical Physics Laboratory, June 3 - 13, 2002

Parodi, K.

The Application of Positron Emission Tomography (PET) to the Monitoring of Heavy Ion Therapy
Heraeus-Ferienkurs, TU Dresden, Sep. 20, 2002

Parodi, K.

The Application of Positron Emission Tomography (PET) to the Monitoring of Heavy Ion Therapy
Workshop "Imaging in Radiotherapy: Present and Future", ISS, Rome, Italy, Dec. 12, 2002

Pawelke, J.

Spurdetektoren, Szintillationsdetektoren, biologische Strahlenwirkung, Positronen-Emissions-Tomographie zur Kontrolle der Strahlentherapie mit schweren Ionen
Vorlesung "Experimentelle Methoden der Kern- und Teilchenphysik - Beschleuniger und Detektoren", TU Dresden, Institut für Kern- und Teilchenphysik, May 14, 2002

Pawelke, J.

Grundlagen der biologischen Strahlenschädigung
Heraeus-Ferienkurs, TU Dresden, Sep. 16 - 27, 2002

Pawelke, J.

In-Beam PET for Quality Assurance of Ion Therapy
National Institute of Radiological Sciences, Irradiation Group and Medical Physics Group at HIMAC, Chiba, Japan, August 2, 2002

Pawelke, J.

Positron Emission Tomography at the Research Center Rossendorf
National Cancer Center, Medical Physics Group, Kashiwa, Japan, August 8, 2002

Pawelke, J.

In-Beam PET for Quality Assurance of Carbon Ion Therapy
National Institute of Radiological Sciences, Research Center of Charged Particle Therapy, Chiba, Japan, August 9, 2002

Pönisch, F.

Streukorrektur in der Rekonstruktion von PET
Seminar, TU Dresden, Institut für Strahlenschutzphysik, May 23, 2002

Pönisch, F.

Rekonstruktion und Streukorrektur von PET-Daten bei der Schwerionentherapie
Heraeus-Ferienkurs, TU Dresden, Sep. 20, 2002

Scheinast, W.

Production of Kaons and Antikaons in Proton-Nucleus Collisions near Threshold
Nuclear Physics Spring Meeting of DPG (Germany), NN(Netherlands) and BNN/SBP (Belgium), Münster, March 14, 2002

Scheinast, W.

Production of Kaons and Antikaons in Proton-Nucleus Collisions near Threshold
Workshop Meson 2002, Krakow, Poland, May 24 - 28, 2002

Schilling, K.D.

Nuclear Spectroscopy Investigations at the Radiation Source ELBE
VIK Dubna, Flerov Laboratory of Nuclear Reactions, April 8, 2002

Schilling, K.D.

Nuclear Physics Experiments of the New ELBE Accelerator in Rossendorf,
17th International Nuclear Physics Divisional Conference of the European Physical Society:
Nuclear Physics in Astrophysics, Debrecen, Hungary, Sep. 30 - Oct. 4, 2002

Schwengner, R.

Magnetic and Collective Rotation in ^{79}Br

Nuclear Physics Spring Meeting of DPG (Germany), NNV(Netherlands) and BNN/SBP (Belgium), Münster,
March 11 - 15, 2002

Seidel, W.

Study of Heavy-Metal Complexes with Thermo-Optical Methods at CLIO

CLIO-Applications & Perspectives - Workshop, Orsay, France, Feb. 28, 2002

Wagner, A.

Der Coulomb-Aufbruch von 8-B und das solare Neutrino-Problem

Seminar TU Dresden, Institut für Kern- und Teilchenphysik, Febr. 5, 2002

Zschocke, S.

Evaluation of QCD Sum Rules for Light Vector Mesons at Finite Density and Temperature

Nuclear Physics Spring Meeting of DPG (Germany), NNV(Netherlands) and BNN/SBP (Belgium), Münster,
March 11 - 15, 2002

Zschocke, S.

Evaluation of QCD Sum Rules for Light Vector Mesons at Finite Density and Temperature

Joint Institute for Nuclear Research, Dubna, Russia, Sep. 16, 2002

Talks at Rossendorf

Barz, H.W.

Fundamentals of the Statistical Model for Calculations of Nuclear Cross Sections

FZ Rossendorf, July 23, 2002

Enghardt, W.

Schwerionen-Tumorthherapie

Lehrerfortbildung im FZ Rossendorf, Jan. 16, 2002

Enghardt, W.

Krebstherapie mit Schwerionen

Tag der offenen Tür, FZ Rossendorf, Sep. 14, 2002

Fahmy, K.

Systeme und Methoden der IR-Biospektroskopie

FZ Rossendorf, June 2002

Frauendorf, S.

Relativistic Mean Field Calculations for Superheavy Nuclei

FZ Rossendorf, July, 14, 2002

Pawelke, J.

Erzeugung quasi-monochromatischer Röntgenstrahlung für zellbiologische Experimente durch Elektronen-Channeling an ELBE

ELBE Machine Advisory Committee, FZ Rossendorf, March 25, 2002

Schwengner, R.

Stand der Vorbereitung kernphysikalischer Experimente an ELBE

ELBE Machine Advisory Committee

FZ Rossendorf, March 25, 2002

Seidel, W.

The FEL-Project at Rossendorf
FZ Rossendorf, Jan. 24, 2002 (Evaluierungskommission Hochfeldlabor)

Seidel, W.

Infrarotstrahlführung vom Resonator bis zu den Nutzerlaboren für U27
FZ Rossendorf, Elbe-Palaver, March 21, 2002

Seidel, W.

FEL (U27) und IR-Beamline, Konzept in den optischen Laboren
ELBE Machine Advisory Committee, March 25, 2002

Seidel, W.

The FELs at Rossendorf
FZ Rossendorf, April 22, 2002 (Studentengruppe Uni Göteborg)

Seidel, W.

The FEL-Project at Rossendorf
FZ Rossendorf, Sept. 06, 2002

Seidel, W.

Wie funktioniert ein Freie-Elektronen-Laser?
FZ Rossendorf, Tag der offenen Tür, Sept. 14, 2002

Talks of Visitors

Angelis de, G., Laboratori Nazionali di Legnaro (LNL), Italy:

The activities of the LNL as a multidisciplinary lab involved in nuclear physics, gravitation, basic quantum mechanics, solid state physics and applications shall be illustrated, August 7, 2002

Baer, M., K. John, MPI Physik Komplexer Systeme, Dresden

Struktur und Funktion von Lipiden in biologischen Membranen, Sept. 2002

Barth, A., Universität Frankfurt/Main:

Swinging proteins - Was Schwingungen über die Funktion einer biologischen Nanopumpe verraten, May 27, 2002

Bernhard, C., Max-Planck-Institut FKF-Stuttgart:

Far-infrared ellipsometry using a synchrotron light source - some results on cuprate high Tc superconductors and related materials, Oct. 14, 2002

Cassing, W., Universität Gießen:

Anti-Kaon-Erzeugung in Proton-Kern-Stößen (Resultate aus dem Gießen-Code), June 3, 2002

Chatterjee, M.L., DRAGON Group TRIUMF, Vancouver, Canada:

Nuclear astrophysics experiments at TRIUMF, Oct. 23, 2002

Chatterjee, M.L., DRAGON Group TRIUMF, Vancouver, Canada:

Lecture series on nuclear physics, Nov. - Dec., 2002

Dathe, M., Forschungszentrum für molekulare Pharmakologie, Berlin:

Membrane-active peptides: the role of structural properties for membrane-disturbing and membrane-penetrating activity, Oct. 21, 2002

- Erhard, M.**, Universität Würzburg, Experimentelle Physik II:
Untersuchung zur Terminierung von ZnSE(001)-und CdTe(001)-Oberflächen mittels Streuung langsamer Ionen,
Dec. 11, 2002
- Ferrari, A.**, CERN-SL Genf, Switzerland:
An introduction to FLUKA physics models and applications, August 29, 2002
- Frauendorf, S.**, University of Notre Dame, USA:
Prediction of superheavy elements by the relativistic mean field theory, July 8, 2002
- Gerlich, D.**, Technische Universität Chemnitz:
CO₂ laser induced evaporation from a nanoparticle, June 3, 2002
- Hartnack, C.**, SUBATECH Nantes, France:
Kaon-Erzeugung in Proton-Kern-Stößen (Resultate aus dem Nantes-Code), June 3, 2002
- Heyne, K.**, Max-Born-Institut, Berlin
Ultrafast coherent nuclear motions in h-bonds in acetic acid dimers, Sept. 2002
- Junghans, A.R.**, University Washington, USA:
A new determination of the astrophysical s-factor for the ${}^7\text{Be}(p,\gamma){}^8\text{B}$ reaction, Oct. 28, 2002
- Kapusta, M.**, Soltan Institute for Nuclear Studies, Otwock-Swierk, Poland:
characterization of Hamamatsu S8550 avalanche photodiode arrays for high resolution scintillator matrices, May 7, 2002
- Kraft, G.**, GSI Darmstadt:
Eine Anwendung nuklearer Methoden: Tumorthherapie mit Schwerionen, March 1, 2002
- Lieb, K.P.**, Universität Göttingen:
Photonen-Kernstrukturuntersuchungen und Materialbearbeitung, March 1, 2002
- Morawetz, K.**, Max-Planck-Institut für Physik komplexer Systeme Dresden:
Giant resonances in asymmetric nuclei, May 27, 2002
- Munshi-Golam, M.**, Institut für Theoretische Physik, Universität Gießen:
Hadronic correlation function and quark number susceptibility at high temperature, June 18, 2002
- Piest, H.**, University of Nijmegen, Rijnhuizen, The Netherlands:
Linear and non-linear IR spectroscopy of astrophysically relevant species using a FEL, Jan. 4, 2002
- Pietralla, N.**, Universität Köln:
Nuclear physics with a free electron laser, Feb. 1, 2002
- Pramatarova, L.**, Bulgarian Academy of Sciences, Sofia, Bulgaria:
Development of an in vitro system for the study of biomineralization induced by Radiation, July 23, 2002
- Reichelt, U.**, TU Dresden:
CR39-Festkörper-Spurdetektoren - Eigenschaften und Modellierung der Spurentwicklung, Jan. 14, 2002
- Ritter, H.G.**, LBL Berkeley, USA:
Recreating the big bang with nuclear collisions at RHIC, Nov. 19, 2002
- Satink, R.G.** FOM-institute for Plasma Physics, Rijnhuizen, The Netherlands:
Dynamics of vibrationally excited, weakly bound complexes, Oct. 25, 2002
- Savchuk, O.**, TU Dresden:
Application of surface plasmon resonance imaging and polarization modulation FTIRRAS mapping techniques for investigation of self-assembled monolayers formed from phosphonic acid on patterned surface, May 24, 2002

Semikh, S., JINR Dubna, Russia:
Polarization observables in pD reactions within the Bethe-Salpeter approach, Nov. 27, 2002

Senger, P., GSI Darmstadt:
Seltsame Teilchen in dichter Kernmaterie, March 1, 20002

Sibirtsev, A., Forschungszentrum Jülich:
Strangeness-Erzeugung in Hadronen-Stößen, June 3, 2002

Stachel, J., Universität Heidelberg:
Dileptonen und chirale Symmetrie in relativistischen Schwerionenstößen, March 01, 20002

Strekalovsky, O., JINR Dubna, Russia:
Dubna Electron Synchrotron (DELSY) - a project of a new SR Source at JINR, Dec. 2, 2002

Uhd-Jepsen, P., Physikalische Fakultät der Universität Freiburg:
Far-infrared spectroscopy of biologically important molecules: What can we learn?, June 17, 2002

Wolf, Gy., KFKI Budapest, Hungary:
Vector mesons in hadronic matter, Dec. 13, 2002

Wolski, D., Soltan Institute for Nuclear Studies, Otwock-Swierk, Poland:
Comparative tests of preamplifiers for Hamamatsu APD arrays, May 7, 2002

Zetenyi, M., KFKI Budapest, Hungary:
 ϕ meson production in p+A collisions - effect of in medium ϕ broadening, June 25, 2002

Meetings organized by the IKH

Topic	Period	Number of Participants
Workshop Antikaon-Workshop	June 03-04, 2002	20
Workshop Topical Meeting at FZ Rossendorf	June 10-11, 2002	40

Personnel

Personnel of the Institute for Nuclear and Hadron Physics

Director: Prof. Dr. E. Grosse¹

Scientific Personnel

Dr. H.W. Barz	Dr. R. Kotte	Dr. R. Schwengner
Dr. D.V. Dimitrov	Dr. S.N. Mallion	Dr. M. Sczepan
Dr. F. Dönau	Dr. K. Möller	Dr. J. Seibert
Dr. F. Dohrmann	Dr. H. Müller	Dr. W. Seidel
Dr. W. Enghardt	Dr. L. Naumann	Dr. H. Sharma
Dr. K. Fahmy	Dr. W. Neubert	Dr. A. Wagner
Dr. S. Frauendorf	Dr. J. Pawelke	Dr. W. Wagner
Dr. P. Gippner	Dr. J.A. Piest	D. Wohlfarth
Prof. Dr. B. Kämpfer	Dr. H. Rotter	Dr. R. Wunsch
Dr. L. Käubler	Dr. K.D. Schilling	Dr. S. Zschocke
Prof. Dr. H. Közle	Dr. M. Schlett	

PhD Students

P. Crespo	N. Lehmann	U. Reichelt
P. Evtushenko	B. Mukherjee	G. Rusev
F. Fiedler	A. Panteleeva	A. Sadowski
G. Furlinski	K. Parodi	W. Scheinast
K. Kanaki	F. Pönisch	

Technical Personnel

H. Angermann	L. Heinrich	J. Philipp
U. Baumann	R.R. Hensel	B. Rimarzig
J.U. Berlin	K.H. Hermann	C. Schneidereit
M. Boeck	M. Hoff	W. Schulze
M. Böse	J. Hutsch	M. Sobiella
R. Förster	M. Langer	A. Wagner (II)
D. Hachenberger	E. Leßmann	U. Wolf
K. Heidel	M. Paul	

¹also TU Dresden

Guest Scientists

Almehed, Daniel	Department of Physics, UMIST, Manchester, UK
Angelis, de Giacomo	INFN, Legnaro, Italy
Botvina, Alexandre S.	Institute for Nuclear Research, Moscow, Russia
Bunzarov, Ivan	Institute for Nuclear Research and Nuclear Energy, Sofia, Bulgaria
Chankova-Bunzarova, Nedialka	Institute for Nuclear Research and Nuclear Energy, Sofia, Bulgaria
Chatterjee, Mohan Lal	DRAGON Group TRIUMF, Vancouver, Canada
Ferrari, Alfredo	CERN-SL, Genf, Switzerland
Junghans, Arnd Rudolf	University of Washington, Center for Experimental Nuclear Physics and Astrophysics, Seattle, USA
Kaptari, Leonid P.	JINR Dubna, Russia
Kapusta, Maciek	Soltan Institute for Nuclear Studies, Department of Electronics, Otwock-Swierk, Poland
Kosev, Krasimir Milchev	Razgrad, Bulgaria
Kostov, Latchesar Kroumov	Institute for Nuclear Research and Nuclear Energy, Sofia, Bulgaria
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