

INTERNATIONAL ASSOCIATION OF MATHEMATICAL PHYSICS



IAMP NEWS BULLETIN

JANUARY 1996

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News from the President

Best wishes for the New Year!

This means that our next Congress comes up in just a year and a half. We look forward to Brisbane and to our first I.A.M.P. meeting on the Australian continent. Members with suggestions about the meeting should contact Professor Anthony Bracken, chair of the Local Committee (ajb@maths.uq.oz.au, Department of Mathematics, University of Queensland, St. Lucia 4067, Queensland, Australia, 61-7-870-2272 FAX) or Professor Huzihiro Araki, chair of the Scientific Committee (araki@kurims.kyoto-u.ac.jp, Research Institute of Mathematical Sciences, Kyoto University, Kyoto 606, Japan, 81-75-753-7272 FAX). Some preliminary information about the meeting appears in this Bulletin.

The Proceedings of the Paris Congress have appeared as a splendid volume (as well as a volume for one of the satellite meetings.) Information about this volume appears in the Bulletin.

Elliott Lieb had been a member of a committee of the American Mathematical Society concerned with ethical guidelines in mathematics. He has brought these guidelines to the attention of the Executive Committee of I.A.M.P., and they have authorized reprinting a copy of these guidelines for your information in this Bulletin.

Recently the President of the University of Rochester has announced the cutback of their Mathematics Department by over one-half, the elimination of their graduate program in mathematics, and their intention to teach undergraduates using adjuncts and faculty from other departments. There has been a ground swell of protest from members of the scientific community, with letters of protest coming from many leaders in science and mathematics. I have just been asked to chair a task force to follow developments in Rochester, to facilitate assistance where possible, and to solicit support from the community of scientists, mathematicians and economists. Interested persons can find information on the American Mathematical Society web server at <http://www.ams.org/committee/profession/>.

A. Jaffe
January 1996

Roland Dobrushin
(1929-1995)

Roland Dobrushin passed away in Moscow, on November 12, 1995, after a serious illness. His death, at the age of 66, is an irreplaceable loss to his family, his friends and the world scientific community.

Dobrushin's outstanding scientific contributions had their source in his exceptional probabilistic intuition, which he developed during his university years, when he was a student of A.N. Kolmogorov. A characteristic feature of his scientific style was the astonishing simplicity and clarity of his main ideas. But translating these into final results also required his enormous technical ability. Dobrushin's most important results belong to the area of rigorous statistical mechanics, considered by him as a branch of probability theory. His first, and by now classical, result concerns the representation of Gibbs states as probability measures. This result was obtained independently by Lanford and Ruelle at about the same time, and is now called the Dobrushin-Lanford-Ruelle (DLR) equation. A bit later, not knowing about the works of Peierls and Griffiths, Dobrushin discovered a method of proving the existence of first order phase transitions. This is now widely known as the Peierls argument. Dobrushin constructed non-translation invariant phases for 3D Ising model, known as Dobrushin's phases. He had remarkable insights about the absence of the long range order in two-dimensional models with continuous symmetry, which was later realized in his joint paper with S. Shlosman. We can only mention here a few highlights: a very important series of papers of Dobrushin and his coworkers about the absence of phase transitions and completely analytic interactions, the remarkable analysis of the form of the droplets (Wulff construction) done together with Kotecky and Shlosman, the classical existence theorems of dynamics in 1-D and 2-D non-equilibrium dynamical systems of statistical mechanics, proven jointly with J. Fritz, the results about Euler and Navier-Stokes equations for the hydrodynamic limit of interacting systems, the work on scaling-invariant random fields. Roland Dobrushin laid the basis of the theory of interacting particle systems. He has important achievements in the information theory of complex networks, in coding theory, in the theory of Markov processes, and in linguistics.

Before "perestroika" Dobrushin did not travel to the West. The Soviet regime could not tolerate his active moral and political position. After the political liberalization in the Soviet Union, his life changed in many respects, but not in the basic one: his wonderful scientific creativity remained at the highest level, being independent of his age, political climate in Russia or anything else.

Dobrushin has been an acute observer of life around him, and his behaviour has reflected an active sense of what is right and decent. He had strong interest in history and literature and his conversation was rich with insights cherished by friends and colleagues. He was a welcome guest in most scientific capitals of the world. But he felt his best in Moscow.

Roland Dobrushin was an outstanding representative of the Moscow mathematical school. His departure is felt as the end of a chapter in its history.

M. Aizenman, A. Jaffe, K. Khanin, J. Lebowitz, E. Lieb, A. Mazel, S. Shlosman, Ya. Sinai and D. Stroock.

PRELIMINARY ANNOUNCEMENT

XIIth International Congress of Mathematical Physics

Brisbane, Australia, July 13-19, 1997

The Congress will be held on the beautiful campus of The University of Queensland. It is expected to take a broadly similar form to the Paris Congress of 1994, with plenary lectures, invited talks and some contributed talks. Shorter satellite meetings on specialized topics will be run either side of the Congress, at other locations in Australia and South-East Asia. A joint meeting of the Australian and New Zealand Mathematical Societies is planned for Auckland in the preceding week.

Travel to Australia is expensive, but participants should be able to negotiate at least one stopover at no extra cost, making the satellite concept workable. The local committee is working hard to attract financial support in the hope that we will be able to offset costs for many participants.

Ample good quality single accommodation in student colleges, with shared bathroom facilities, has been reserved on the campus, at the very reasonable rate of AUS\$42 (\approx US\$30) per night (bed & full breakfast). There is a wide variety of hotels and motels in downtown Brisbane, a short bus trip from the campus, ranging in cost up to AUS\$200 per night for a five-star hotel.

Professor H Araki is chairing an international scientific advisory committee for the Congress. The organizing committee in Brisbane is being built up around A J Bracken (Local Chairman), M D Gould (Secretary) and B D Jones (Treasurer).

For those of you who have access to the WorldWideWeb, a homepage is being set up at <http://www.maths.uq.oz.au/~icmp97> where new information about the Congress will be displayed, and where you can 'sign' our guest book to be put on our Emailing list. Alternatively, Email icmp97@maths.uq.oz.au asking to be added to the list. If you have already received a preliminary notice of the meeting by Email, then you are already on this list, and will receive all future Email postings. Information will also be distributed by more traditional means, and members of the IAMP, as well as those on our Email list, will receive the first Bulletin as a matter of course. Watch this space also for further news.

If you have yet to visit South-East Asia, take this opportunity to combine mathematical physics with visits to some of the world's most spectacular tourist attractions.

A J Bracken
December 1995

Ethical Guidelines for the Society

In January 1994 the Council received the report of its Special Advisory Committee on Professional Ethics. The committee, which consisted of Murray Gerstenhaber, Frank Gilfeather, Elliott Lieb, and Linda Keen (chair), presented ethical guidelines for adoption by the Council. Those draft guidelines were published twice in the *Notices*, with a request to the membership for responses and suggestions for changes or improvements. These were sent to the committee, which considered all suggestions. The committee then redrafted the guidelines, which were then presented to the January 1995 Council. At that meeting, the Council voted to adopt these guidelines on behalf of the Council (by a vote that was unanimous save for one abstention). Later, in *Business by Mail* and according to the bylaws, the Council approved the Guidelines in the name of the Society by a vote of twenty-five (25) in favor and three (3) opposed.

Ethical Guidelines of the American Mathematical Society

To assist in its chartered goal, "...the furtherance of the interests of mathematical scholarship and research...", and to help in the preservation of that atmosphere of mutual trust and ethical behavior required for science to prosper, the American Mathematical Society, through its Council, sets forth the following guidelines. While it speaks only for itself, these guidelines reflect its expectations of behavior both for its members and for all members of the wider mathematical community, including institutions engaged in the education or employment of mathematicians or in the publication of mathematics.

It is not intended that something not mentioned here is necessarily outside the scope of AMS interest. These guidelines are not a complete expression of the principles that underlie them but will, it is expected, be modified and amplified by events and experience. These are guidelines, not a collection of rigid rules.

The American Mathematical Society, through its Committee on Professional Ethics (COPE), may provide an avenue of redress for individual members injured in their capacity as mathematicians by violations of its ethical principles. COPE, in accordance with its procedures, will, in each case, determine the appropriate ways in which it can be helpful (including making recommendations to the Council of the Society). However, the AMS cannot enforce these guidelines, and it cannot substitute for individual responsibility or for the responsibility of the mathematical community at large.

I. Mathematical Research and its Presentation

The public reputation for honesty and integrity of the mathematical community and of the Society is its collective treasure, and its publication record is its legacy.

The correct attribution of mathematical results is essential, both as it encourages creativity, by benefiting the creator whose career may depend on the recognition of the work, and as it informs the community of when, where, and

sometimes how original ideas have entered into the chain of mathematical thought. To that end, mathematicians have certain responsibilities, which include the following:

To endeavor to be knowledgeable in their field, especially as regards related work;

To give proper credit (even to unpublished sources, because the knowledge that something is true or false is valuable, however it is obtained);

To use no language that suppresses or improperly detracts from the work of others;

To correct in a timely way or withdraw work that is erroneous or previously published.

A claim of independence may not be based on ignorance of well-disseminated results. Errors and oversights can occur, but it is the responsibility of the person making the error to set the record straight.

On appropriate occasions, it may be desirable to offer or accept joint authorship when independent researchers find that they have produced identical results. However, the authors listed for a paper must all have made a significant contribution to its content, and all who have made such a contribution must be offered the opportunity to be listed as an author. To claim a result in advance of its having been achieved with reasonable certainty injures the community by restraining those working toward the same goal. Publication of results that are announced must not be unreasonably delayed. Because the free exchange of ideas necessary to promote research is possible only when every individual's contribution is properly recognized, the Society will not knowingly publish anything that violates this principle, and it will seek to expose egregious violations anywhere in the mathematical community.

II. Social Responsibility of Mathematicians

The Society promotes mathematical research together with its unrestricted dissemination, and to that end encourages all and will strive to afford equal opportunity to all to engage in this endeavor. Mathematical ability must be respected wherever it is found, without regard to race, gender, ethnicity, age, sexual orientation, religious or political belief, or disability.

The growing importance of mathematics in society at large and of public funding of mathematics may increasingly place members of the mathematical community in conflicts of interest. The appearance of bias in reviewing, refereeing, or in funding decisions must be scrupulously avoided, particularly where decisions may affect one's own research, that of close colleagues, or of one's students; in extreme cases one must withdraw.

A reference or referee's report fully and accurately reflecting the writer's views is often given only on the understanding that it be confidential or that the name of the writer be withheld from certain interested parties; therefore, a request for a reference or report must be assumed, unless there is a statement to the contrary, to carry an implicit promise of confidentiality or anonymity which must be carefully kept unless negated by law. The writer of the reply must respond fairly and keep confidential any privileged information, personal or mathematical, that the writer receives. If the requesting individual, institution, agency or company becomes aware that confidentiality or

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anonymity cannot be maintained, that must immediately be communicated, and if known in advance, must be stated in the original request.

Where choices must be made and conflicts are unavoidable, as with editors or those who decide on appointments or promotions, it is essential to keep careful records which, even if held confidential at the time, would, when opened, demonstrate that the process was indeed fair.

Freedom to publish must sometimes yield to security concerns, but mathematicians should resist excessive secrecy demands, whether by government or private institutions.

When mathematical work may affect the public health, safety or general welfare, it is the responsibility of mathematicians to disclose the implications of their work to their employers and to the public, if necessary. Should this bring retaliation, the Society will examine the ways in which it may want to help the "whistle-blower", particularly when the disclosure has been made to the Society.

III. Education and Granting of Degrees

Holding a Ph.D. degree is virtually indispensable to an academic career in mathematics and is becoming increasingly important as a certificate of competence in the wider job market. An institution granting a degree in mathematics is certifying that competence and must take full responsibility for it by insuring the high level and originality of the thesis work and sufficient knowledge by the recipient of important branches of mathematics outside the scope of the thesis. The original results in a thesis should be publishable in a recognized journal. When there is evidence of plagiarism, it must be carefully investigated, even if it comes to light after granting the degree, and, if proven, the degree should be revoked.

Mathematicians and organizations involved in advising graduate students should honestly inform them about the employment prospects they may face upon completion of their degrees. No one should be exploited by the offer of a temporary position at a low salary and/or a heavy work load.

IV. Publications

The Society will not take part in the publishing, printing or promoting of any research journal where there is some acceptance criterion, stated or unstated, that conflicts with the principles of these guidelines. It will promote the quick refereeing and timely publication of articles accepted to its journals.

Editors are responsible for the timely refereeing of articles and must judge articles by the state of knowledge at the time of submission. Editors and referees should accept a paper for publication only if they are reasonably certain the paper is correct.

The contents of an unpublished and uncirculated paper should be regarded by a journal as privileged information. If the contents of a paper become known in advance of publication solely as a result of its submission to or handling by a journal, and if a later paper based on knowledge of the privileged information is received anywhere (by the same or another journal), then any editor aware of the facts must refuse or delay publication of the later paper

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until after publication of the first—unless the first author agrees to earlier publication of the later paper.

At the time a manuscript is submitted, editors should notify authors whenever a large backlog of accepted papers may produce inordinate delay in publication. A journal may not delay publication of a paper for reasons of an editor's self interest or of any interest other than the author's. The published article should bear the date on which the manuscript was originally submitted to the journal for publication, together with the dates of any revisions. Editors must be given and accept full scientific responsibility for their journals; when a demand is made by an outside agency for prior review or censorship of so-called "sensitive" articles, that demand must be resisted, and, in any event, knowledge of the demand must be made public.

All mathematical publishers, particularly those who draw without charge on the resources of the mathematical community through the use of unpaid editors and referees, must recognize that they have made a compact with the community to disseminate information, and that compact must be weighed in their business decisions.

Both editors and referees must respect the confidentiality of materials submitted to them unless these have previously been made public, and above all may not appropriate to themselves ideas in work submitted to them or do anything that would impair the rights of authors to the fruits of their labors. Editors must preserve the anonymity of referees unless there is a credible allegation of misuse.

These are ethical obligations of all persons or organizations controlling mathematical publications, whatever their designation.

Robert M. Fossum
Secretary
Urbana, IL



International Press announces a new publication in the Mathematical Physics Series



The XIth International Congress of Mathematical Physics, the ICMP-Paris, took place in the prestigious Conference Center of the UNESCO, July 18-22, and Grand Amphithéâtre of the Sorbonne, July 23, where two lectures of general interest open to the public were given. With over 1000 participants (versus 400 to 500 in previous congresses), of 60 nationalities, its high-quality scientific program and its convivial and enthusiastic atmosphere, it marked a new step in the affirmation today of mathematical physics as a basic domain of research. These proceedings present invited lectures, either plenary or given in the sessions. This book will be a testimony and illustration both of the congress and of the vitality of mathematical physics, and it will be a useful and pleasant working instrument for all persons interested in mathematical physics and more generally in science.

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This book will be a testimony and illustration both of the congress and of the vitality of mathematical physics, and that it will be a useful and pleasant working instrument for all our participants and, beyond, for all persons interested in mathematical physics and more generally in science.

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edited by — S. AKBULUT, T. ONDER

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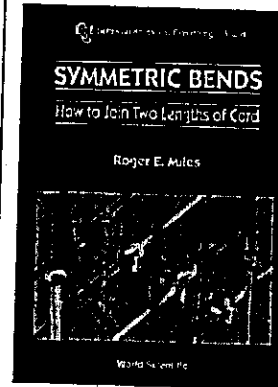
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Series on Knots and Everything - Vol. 8

SYMMETRIC BENDS | HOW TO JOIN TWO LENGTHS OF CORD

by Roger E Miles (Australian Nat'l Univ.)



A bend is a knot securely joining together two lengths of cord (or string or rope), thereby yielding a single longer length. There are many possible different bends, and a natural question that has probably occurred to many is: 'Is there a 'best' bend and, if so, what is it?' Most of the well-known bends happen to be symmetric — that is, the two constituent cords within the bend have the same geometric shape and size, and interrelationship with the other. Such 'symmetric bends' have great beauty, especially when the two cords bear different colours. Moreover, they have the practical advantage of being easier to tie (with less chance of error), and of probably being stronger, since neither end is the weaker.

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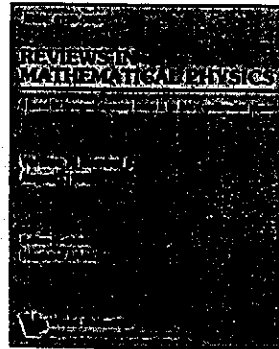
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PICARD POTENTIALS AND HILL'S EQUATION ON A TORUS

FLOQUET THEORY REVISITED

F. Gesztesy Department of Mathematics, University of Missouri, Columbia, MO 65211, and G. Teschl, Department of Mathematics, University of Missouri, Columbia, MO 65211 and Department of Theoretical Physics, Technical University of Graz, Htsx, 8010; Australia

ON THE DOUBLE COMMUTATION METHOD

COMMUTATION METHODS FOR JACOBI OPERATORS

F. Gesztesy, R. Ratnaseelan, and G. Teschl, Department of Mathematics, University of Missouri, Columbia, MO 65211,

THE KDV HIERARCHY AND ASSOCIATED TRACE FORMULAS

W. Bulla, Institute for Theoretical Physics, Technical University of Graz, A-8010 Graz, Austria, F. Gesztesy, Department of Mathematics, University of Missouri, Columbia, MO 65211, H. Holden, Department of Mathematical Sciences, The Norwegian Institute of Technology, University of Trondheim, N-7034 Trondheim, Norway and G. Teschl, Institute for Theoretical Physics, Technical University of Graz, A-8010 Graz, Austria and Department of Mathematics, University of Missouri, Columbia, MO 65211,

ALGEBRO-GEOMETRIC QUASI-PERIODIC FINITE-GAP SOLUTIONS OF THE TODA AND KAC-VAN MOERBEKE HIERARCHIES

F. Gesztesy, Department of Mathematics, University of Missouri, Columbia, MO 65211 and H. Holden, Department of Mathematical Sciences, Norwegian Institute of Technology, University of Trondheim, N-7034 Trondheim, Norway

ON TRACE FORMULAS FOR SCHRÖDINGER-TYPE OPERATORS

F. Gesztesy, R. Nowell, Department of Mathematics, University of Missouri, Columbia, MO 65211 and W. Potz, Department of Physics, University of Illinois at Chicago, Chicago, IL 60607

ONE-DIMENSIONAL SCATTERING THEORY FOR QUANTUM SYSTEMS WITH NONTRIVIAL SPATIAL ASYMPTOTICS

P.E.T. Jorgensen, Department of Mathematics, The University of Iowa, Iowa City, Iowa 52242, L. M. Schmitt, University of Aizu, Aizu-Wakamatsu, Fukushima Prefecture 965, Japan, and R. F. Werner, F. B. Physik, Universität Osnabrück, 49069 Osnabrück, Germany

POSITIVE REPRESENTATIONS OF GENERAL COMMUTATION RELATIONS ALLOWING WICK ORDERING

Palle E. T. Jorgensen, Department of Mathematics, University of Iowa, Iowa City, IA 52242

A DUALITY FOR ENDOMORPHISMS OF VON NEUMANN ALGEBRAS

Palle E. T. Jorgensen, Department of Mathematics, University of Iowa, Iowa City, IA 52242 and Steen Pedersen, Department of Mathematics, Wright State University, Dayton, OH 45435
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Ola Bratteli, Mathematics Institute, University of Oslo, PB 1053 - Blindern, N-0316 Oslo, Norway, Palle E. T. Jorgensen, Department of Mathematics, University of Iowa, Iowa City, IA 52242, and Geoffrey L. Price, Department of Mathematics 9E, U.S. Naval Academy, Annapolis, MD 21402
ENDOMORPHISMS OF $B(\mathcal{H})$

Ola Bratteli, Mathematics Institute, University of Oslo, PB 1053 - Blindern, N-0316 Oslo, Norway, Palle E. T. Jorgensen, Department of Mathematics, University of Iowa, Iowa City, IA 52242
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Lars Bildsten and Greg Ushomirsky, Department of Physics, Department of Astronomy and Space Sciences Laboratory, University of California, Berkeley, CA 94720 and Curt Cutler, Department of Physics, Pennsylvania State University, University Park, PA 16803
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Jorge Pullin, Center for Gravitational Physics and Geometry, Department of Physics, 104 Davey Lab, The Pennsylvania State University, University Park, PA 16802
COLLIDING BLACK HOLES WITH LINEARIZED GRAVITY

Rodolfo Gambini, Instituto de Física, Facultad de Ingeniería, J. Herrera y Reissig 565, 11300 Montevideo, Uruguay, Octavio Obregón, Instituto de Física, Universidad de Guanajuato, PO Box E-143, C. P. 37150, León, Guanajuato, México, and Jorge Pullin, Center for Gravitational Physics and Geometry, Department of Physics, 104 Davey Lab, The Pennsylvania State University, University Park, PA 16802
TOWARDS A LOOP REPRESENTATION FOR QUANTUM CANONICAL SUPERGRAVITY

Jane C. Charlton, Astronomy and Astrophysics Department, Pennsylvania State University, University Park, PA 16802 and Center for Gravitational Physics and Geometry, Pennsylvania State University, University Park, PA 16802, Christopher W. Churchill, University of California, Santa Cruz, and Suzanne M. Linder, Pennsylvania State University
PROBING $LY\ \alpha$ ABSORBERS WITH DOUBLE LINES OF SIGHT

Alejandro Corichi and Michael P. Ryan Jr., Center for Gravitational Physics and Geometry, Department of Physics, The Pennsylvania State University, University Park, PA 16802
QUANTIZATION OF NONSTANDARD HAMILTONIAN SYSTEMS

Jason S. Best, Astronomy and Astrophysics Department, Pennsylvania State University, University Park, PA 16802, Jane C. Charlton, Astronomy and Astrophysics Department and Center for Gravitational Physics and Geometry, Pennsylvania State University, University Park, PA 16802, and Gottfried Mayer-Kress, Center for Complex Systems Research, Beckman Institute, Physics Dept. UIUC, Urbana, IL 61801
ANALYSIS OF GALAXY MORPHOLOGY AND EVOLUTION USING THE POINTWISE DIMENSION

Lee Smolin, Center for Gravitational Physics and Geometry, Department of Physics, The Pennsylvania State University, University Park, PA 16802
THE BEKENSTEIN BOUND, TOPOLOGICAL QUANTUM FIELD THEORY AND PLURALISTIC QUANTUM COSMOLOGY

Peter Anninos and Edward Seidel, National Center for Supercomputing Applications, Beckman Institute, 405 N. Mathews Ave., Urbana, IL 61801 and Department of Physics, University of Illinois, Urbana, IL 61801, Richard Price, Department of Physics, University of Utah, Salt Lake City, UT 84112-1195, Jorge Pullin, Center for Gravitational Physics and Geometry, Department of Physics, 104 Davey Lab, The Pennsylvania State University, University Park, PA 16802, Wai-Mo Suen, National Center for Supercomputing Applications, Beckman Institute, 405 N. Mathews Ave., Urbana, IL 61801 and McDonnell Center for the Space Sciences, Department of Physics, Washington University, St. Louis, Missouri, 63130
HEAD-ON COLLISION OF TWO BLACK HOLES: COMPARISON OF DIFFERENT APPROACHES

Abhay Ashtekar, Center for Gravitational Physics and Geometry, Physics Department, Penn State University, University Park, PA 16802-6300, Jerzy Lewandowski, Institute of Theoretical Physics, University of Warsaw, 00-681 Warsaw, Poland, Donald Marolf, Department of Physics, The University of California, Santa Barbara, CA 93106, José Mourão, Sector de Física, U.C.E.H., Universidade do Algarve, Campus de Gambelas, 8000 Faro, Portugal, and Thomas Thiemann, Center for Gravitational Physics and Geometry, Physics Department, Penn State University, University Park, PA 16802-6300
QUANTIZATION OF DIFFEOMORPHISM INVARIANT THEORIES OF CONNECTIONS WITH LOCAL DEGREES OF FREEDOM

J. Fernando Barbero G., Center for Gravitational Physics and Geometry, Department of Physics, Pennsylvania State University, University Park, PA 16802 and Madhavan Varadarajan, Department of Physics, University of Utah, Salt Lake City, UT 84112
HOMOGENEOUS 2+1 DIMENSIONAL GRAVITY IN THE ASHTEKAR FORMULATION

Abhay Ashtekar, Center for Gravitational Physics and Geometry, Physics Department, Penn State, University Park, PA 16802
PROBING QUANTUM GEOMETRY

John R. Klauder, Departments of Physics and Mathematics, University of Florida, Gainesville, FL 32611
ISOLATION AND EXPULSION OF DIVERGENCES IN QUANTUM FIELD THEORY

Vincenzo Grecchi, Università di Bologna, Dipartimento di Matematica, Piazza di Porta S. Donato 5, I-40127 Bologna, Italy, André Martinez, Université de Paris-Nord, Département de Mathématiques (CNRS, URA 742), Av. J. B. Clément, F-93430 Villetaneuse, France, and Andrea Sacchetti, Università di Modena, Dipartimento di Matematica, Via Campi 213/B, I-41100 Modena, Italy
SPLITTING INSTABILITY: THE UNSTABLE DOUBLE WELLS

DOUBLE WELL STARK EFFECT: CROSSING AND ANTICROSSING OF RESONANCES.

Gerald Hofmann, Universität Leipzig, Mathematisches Institut, Augustusplatz 10, Leipzig, 04109
ON THE GNS REPRESENTATION OF GENERALIZED FREE FIELDS WITH INDEFINITE METRIC

GENERALIZED FREE FIELD LIKE $U(1)$ -GAUGE THEORIES WITHIN THE WIGHTMAN FRAMEWORK

Alex J. Dragt, Stanford Linear Accelerator Center, Stanford University, Stanford, California 94309
COMPUTATION OF MAPS FOR PARTICLE AND LIGHT OPTICS BY SCALING, SPLITTING, AND SQUARING

PREPRINTS RECEIVED IN SWANSEA

S. Albeverio^{1,2}, R. Gielerak^{3,5} and F. Russo^{4,5}. ¹ Fakultät für Mathematik, Ruhr-Universität, D 44780 Bochum, Germany. ² SFB 237 Essen-Bochum-Düsseldorf: BiBoS Research Centre, D33615 Bielefeld, Germany; CERFIM, Locarno (Switzerland). ³ Institute of Theoretical Physics, University of Wrocław, 50-205 Wrocław, Poland. ⁴ Université Paris Nord, Département de Mathématiques, Institut Galilée, Av. J.B. Clément, F-93430 Villetaneuse, France. ⁵ Universität Bielefeld, BiBoS, D-33615 Bielefeld, Germany.
SFB-237 - Preprint Nr. 273, September 1995.
Constructive Approach to the Global Markov Property in Euclidean Quantum Field Theory: 1. Constructions of Transitions Kernels

S. Albeverio^{1,2,3}, A. Hilbert^{1,3} and V. Kolokoltsov^{1,4}. ¹ Fakultät für Mathematik, Ruhr-Universität, D 44780 Bochum, Germany. ² SFB 237 Essen-Bochum-Düsseldorf: CERFIM, Locarno (Switzerland). ³ BiBoS Research Centre, D33615 Bielefeld, Germany. ⁴ Supported by Alexander von Humboldt Stiftung. On leave from Moscow Institute of Electronics and Mathematics (MIEM).
SFB 237 - Preprint Nr. 269, August 1995.
Transience of Stochastically Perturbed Classical Hamiltonian Systems and Random Wave Operators

S. Albeverio^{1,2}, Y. Hu^{1,3,4} and X.Y. Zhou^{1,3,5}. ¹ Fakultät für Mathematik, Ruhr-Universität, D 44780 Bochum, Germany. ² SFB 237 Essen-Bochum-Düsseldorf: BiBoS Research Centre, D33615 Bielefeld, Germany; CERFIM, Locarno (Switzerland). ³ Partly supported by Alexander von Humboldt Stiftung. ⁴ Institute of Mathematical Science, Academia Sinica, Wuhan 430071, China. ⁵ Department of Mathematics, Beijing Normal University, Beijing 100875, China.
SFB 237 - Preprint Nr. 268, August 1995.
A Remark on Non Smoothness of the Self-intersection Local Time of Planar Brownian Motion

S. Albeverio^{1,2} and A. Khrennikov^{1,3}. ¹ Fakultät für Mathematik, Ruhr-Universität, D 44780 Bochum, Germany. ² SFB 237 Essen-Bochum-Düsseldorf: BiBoS Research Centre, D33615 Bielefeld, Germany; CERFIM, Locarno (Switzerland). ³ Alexander von Humboldt Fellowship.
SFB 237 - Preprint Nr. 263, July 1995.
Representation of the Weyl Group in Spaces of Square Integrable Functions with Respect to p -adic Valued Gaussian Distributions

S. Albeverio^{1,2} and K.A. Makarov^{1,3}. ¹ Fakultät für Mathematik, Ruhr-Universität, D 44780 Bochum, Germany. ² SFB 237 Essen-Bochum-Düsseldorf: BiBoS Research Centre, D33615 Bielefeld, Germany; CERFIM, Locarno (Switzerland). ³ Alexander von Humboldt Fellow, Department of Computational and Mathematical Physics, St. Petersburg University, 198094 St. Petersburg, Russia.
SFB 237 - Preprint Nr. 270, August 1995.

Attractors in a Model Related to the Three-body Quantum Problem

S. Albeverio^{1,2} and J.-L. Wu^{1,3}. ¹ Fakultät für Mathematik, Ruhr-Universität, D 44780 Bochum, Germany. ² SFB 237 Essen-Bochum-Düsseldorf: BiBoS Research Centre, D33615 Bielefeld, Germany; CERFIM, Locarno (Switzerland). ³ Alexander von Humboldt Foundation research fellow on leave from Institute of Applied Mathematics, Academia Sinica, Beijing 100080, PR China.
SFB 237 - Preprint Nr. 271, August 1995.

A Mathematical Flat Integral Realization and a Large Deviation Result for the Free Euclidean Field

L. Burakovsky* and L.P. Horwitz†. School of Physics and Astronomy, Raymond and Beverly Sackler Faculty of Exact Sciences, Tel-Aviv University, Tel-Aviv 69978, Israel.

* Bitnet: BURAKOV@TAUNIVM.TAU.AC.IL.

† Bitnet: HORWITZ@TAUNIVM.TAU.AC.IL. Also at Department of Physics, Bar-Ilan University, Ramat-Gan, Israel.
Preprint Nr. TAUP-2180-94.

Covariant Thermodynamics and 'Realistic' Friedmann Model

L. Burakovsky* and L.P. Horwitz†. School of Physics and Astronomy, Raymond and Beverly Sackler Faculty of Exact Sciences, Tel-Aviv University, Tel-Aviv 69978, Israel.

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Preprint Nr. TAUP-2193-94.

5D Generalized Inflationary Cosmology

H.-O. Georgii, Mathematisches Institut der Universität München, Theresienstr. 39, D-80333 München, Email: georgii@rz.mathematik.uni-muenchen.de
Mixing Properties of Induced Random Transformations

H.-O. Georgii* and O. Häggström†. University of Munich and Chalmers University of Technology. * Research partially supported by the Isaac Newton Institute, Cambridge. † Research supported by the Swedish Natural Science Research Council and the Deutsche Forschungsgemeinschaft.
Phase Transition in Continuum Potts Models

H.-O. Georgii and T. Kühneth, Mathematisches Institut der Universität München, Theresienstr. 39, D-80333 München, Email: georgii@rz.mathematik.uni-muenchen.de
Stochastic Comparison of Point Random Fields

H. Grosse^{1*}, C. Klimčik² and P. Presnajder³. ¹ Institute for Theoretical Physics, University of Vienna, Boltzmanngasse 5, A-1090 Vienna, Austria. ² Theory Division, CERN, CH-1211 Geneva 23, Switzerland. ³ Department of Theoretical Physics, Comenius University, Mlynská dolina F1, SK-84215 Bratislava, Slovakia. * Part of Project No. P8916-PHY of the 'Fonds zur Förderung der wissenschaftlichen Forschung in Österreich'.

Preprint Nr. CERN-TH/95-195, UWThPh-20-1995, hep-th/9507074, July 1995.

Field Theory on a Supersymmetric Lattice

H. Grosse^{1*}, C. Klimčik² and P. Presnajder³. ¹ Institute for Theoretical Physics, University of Vienna, Boltzmanngasse 5, A-1090 Vienna, Austria. ² Theory Division, CERN, CH-1211 Geneva 23, Switzerland. ³ Department of Theoretical Physics, Comenius University, Mlynská dolina F1, SK-84215 Bratislava, Slovakia. * Part of Project No. P8916-PHY of the 'Fonds zur Förderung der wissenschaftlichen Forschung in Österreich'.

Preprint Nr. UWThPh-1995-21.

Finite Gauge Model on the Truncated Sphere

H. Grosse^{1*}, C. Klimčik² and P. Presnajder³. ¹ Institute for Theoretical Physics, University of Vienna, Boltzmanngasse 5, A-1090 Vienna, Austria. ² Theory Division, CERN, CH-1211 Geneva 23, Switzerland. ³ Department of Theoretical Physics, Comenius University, Mlynská dolina F1, SK-84215 Bratislava, Slovakia. * Part of Project No. P8916-PHY of the 'Fonds zur Förderung der wissenschaftlichen Forschung in Österreich'.

Preprint Nr. CERN-TH/95-274, IHES-1995-nnn, UWThPh-33-1995, hep-th/9510177, October 1995.

Simple Field Theoretical Models on Noncommutative Manifolds

- H. Grosse^{1*}, C. Klimcĉk² and P. Presnajder³. ¹ Institute for Theoretical Physics, University of Vienna, Boltzmannngasse 5, A-1090 Vienna, Austria. ² Theory Division, CERN, CH-1211 Geneva 23, Switzerland. ³ Department of Theoretical Physics, Comenius University, Mlynská dolina F1, SK-84215 Bratislava, Slovakia. * Part of Project No. P8916-PHY of the 'Fonds zur Förderung der wissenschaftlichen Forschung in Österreich'.
Preprint Nr. CERN-TH/95-264, UWThPh-32-1995, hep-th/9510083, October 1995.
Topologically Nontrivial Field Configurations in Noncommutative Geometry
- H. Grosse^{1*}, C. Klimcĉk^{2†} and P. Presnajder³. ¹ Institute for Theoretical Physics, University of Vienna, Boltzmannngasse 5, A-1090 Vienna, Austria. ² Theory Division, CERN, CH-1211 Geneva 23, Switzerland. ³ Department of Theoretical Physics, Comenius University, Mlynská dolina F1, SK-84215 Bratislava, Slovakia. * Part of Project No. P8916-PHY of the 'Fonds zur Förderung der wissenschaftlichen Forschung in Österreich'. † Partially supported by grant GACR 2178.
Preprint Nr. CERN-TH/95-138, UWThPh-19-1995, hep-th/9505175.
Towards Finite Quantum Field Theory in Non-Commutative Geometry
- P. Leifer, School of Physics and Astronomy, Beverly and Raymond Sackler Faculty of Exact Sciences*, Tel -Aviv University, Tel-Aviv, 69978 Israel.
* Mortimer and Raymond Sackler Institute of Advanced Studies.
Preprint Nr. TAUP 2262-95.
On a Nonlinear Nonperturbative Modification of Quantum Mechanics
- V.B. Priezzhev, D.V. Kitarev and E.V. Ivashkevich, Laboratory of Theoretical Physics, Joint Institute of Nuclear Research, Dubna 141980, Russia.
Preprint Nr. DIAS-STP-95-34.
Formation of Avalanches and Critical Exponents in Abelian Sandpile Model

INTERNATIONAL ASSOCIATION OF MATHEMATICAL PHYSICS



IAMP NEWS BULLETIN

AUGUST 1996

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Change of Address: Please inform the President:
Prof. A.M. Jaffe if you
should change your address.

News from the President

I hope that those of you with summer vacation have profited as much with your scientific work as I have! This means that I should not have very much news. However the news I do have is quite interesting.

The most important news I have is the establishment by Daniel Iagolnitzer of a prize for mathematical physics. The Executive Committee has approved the existence of the prize, and it is planned that this prize will be awarded for the first time during the Brisbane Congress. I welcome your suggestions for members of the (small) committee to select the first prize winner(s).

We look forward to the Brisbane Congress July 13-19, 1997. I understand that a first round of invitations to plenary speakers and session organizers have been sent. The New Zealand Mathematical Society is also planning a satellite meeting.

I am happy to report that the situation I described in the last Bulletin at the University of Rochester has been resolved in a positive way. At the end of March, President Jackson agreed that the mathematics graduate program will continue. Teaching of elementary mathematics courses will remain under the auspices of the mathematics department. The Rochester physics department was instrumental in the final negotiations, leading to renewal of mathematical-physics collaboration between the two departments. In the course of my involvement through the AMS, I set up a 30-person task force, of whom 15 members were non-mathematicians. The support for mathematics coming from outside the mathematics community, and especially from the physics, chemistry, biology, computer science, and economics communities, as well as from many other areas, including the business community, was central to making the point: *mathematics is the enabling discipline for a wide variety of research*. The group I formed remains in existence as the "Mathematics Advocacy Task Force" and will take part in occasional projects to bring these views to the forefront. We hope to hold a workshop on "The Role of Mathematics" during the next year.

Concerning IAMP itself, a Web site is being set up by Charles Radin at the University of Texas. I hope that the Web site will eventually become a main channel of communication with members. The address is "<http://www.ma.utexas.edu/iamp/index.html>". At present the site is in a preliminary state, but it does contain names and addresses of IAMP members. In addition, one can join the IAMP through the Web site. (Please suggest this to your students and coworkers who might be interested.) Eventually dues will also be payable by credit card on the Web. If you forget the address, just search for "International Association of Mathematical Physics", which comes up immediately in AltaVista, and is the way I just found us. A number of Web surfers have also found us and have already joined IAMP, even before our site was announced! Any suggestions for improvement to the site can be sent to Charles Radin and/or to me.

Finally, the 1996 election ballot is enclosed with this Bulletin and you should return your form a.s.a.p. to the Secretary, Aubrey Truman.

Enjoy the rest of the summer/winter!

Arthur Jaffe

E-mail: iamp@math.harvard.edu or FAX: (617) 495-2895

ICMP-Paris (1994, July)

Dear Participants of the ICMP-Paris (1994, July),

It was a great pleasure to welcome you in Paris and I hope you enjoyed your stay. The Proceedings have appeared as a splendid volume in September 1995 and have been mailed to the participants in November 1995. If you did not receive the book, please tell the ICMP-Paris and indicate your exact and complete present address.

D. Iagolnitzer
FAX (33)1.69.09.81.20
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France

ELECTRONIC MATHEMATICAL PHYSICS ARCHIVE

Dear Colleague:

We remind you that the archive is completely free to the user, and can be accessed by sending email messages to the internet address `mp_arc@math.utexas.edu`. Instructions are automatically returned to the sender of any such request to that address.

To receive the paper from the archive whose number is Y-N, send the message (precisely; in particular be careful of capitals, colon, etc.):

REQUEST: send papers
NUMBER: Y-N

to the address `mp_arc@math.utexas.edu`.

Finally, we note that the archive is also a repository of email addresses and some utilities for use with the archive, and that there are three new features to the archive: a keyword search, optional file compression, and a subscription service for abstracts of archived papers.

H. Koch, R. de la Llave, C. Radin

Dept. of Mathematics
University of Texas at Austin

STATISTICAL MECHANICS AS A BRANCH OF THE PROBABILITY THEORY

Vienna, 1996

CONFERENCE DEDICATED TO THE MEMORY OF ROLAND L. DOBRUSHIN

The conference will be held from Monday, September 16, to Friday, September 20, in the Erwin Schrödinger Institute in Vienna.

TOPICS OF THE CONFERENCE

The topics of the conference are those in which Roland Dobrushin was interested and to which he contributed. They include the following:

- equilibrium systems (uniqueness, analyticity, interfaces, etc.)
- systems with random interactions,
- hydrodynamic limit,
- stochastic dynamics and convergence to equilibrium,
- methods of statistical physics in related areas (dynamical systems, information networks, neural networks, etc.)
- nongibbsian states, renormalization group.

PARTICIPANTS

Among the people expected to present a talk are:
C. Boldrighini, J. Brémont, L. Chayes, J. Fritz, G. Grimmett, B. Gurevich, F. den Hollander, A. Jaffe, A. Klein, A. Kupiainen, Ch. Maes, P. Major, V. Malyshev, F. Martinelli, R. Minlos, S. Miracle-Sole, Ch. Newman, E. Olivieri, E. Pecherskij, A. Pellegrinotti, A. Rybko, H. Spohn, Yu. Suhov, S. Varadhan, A. Vershik, M. Zahradnik.

ORGANIZING COMMITTEE

W. Thirring, J. Lebowitz, Ya. Sinai, R. Kotecký, S. Shlosman.

APPLICATIONS

Those wishing to participate, please, send a message to

Professor S. Shlosman,
Department of Mathematics,
University of California at Irvine,
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`shlosman@math.uci.edu`

**International Conference on Operator Algebras
at The Institute of Mathematical Sciences, Madras, India
during January 6-11, 1997**

Details of the Technical Programme:

The daily programme, for each of the six days of the conference, will be as follows:

<i>Time</i>	<i>Activity</i>
0900 - 1030	Lecture by Principal Speaker
1030 - 1100	Coffee break
1100 - 1230	Lecture by Principal Speaker
1230 - 1400	Lunch
1400 - 1500	Lecture
1500 - 1530	Coffee break
1530 - 1630	Lecture

Principal Speakers:

The morning sessions of each day are devoted to lectures by 'principal speakers'; the twelve available 90 minute lectures (on the forenoons of the six days of the conference) will be devoted to four mini-courses consisting of a series of three lectures each; so far, Professors Uffe Haagerup, Adrian Ocneanu and Dan Virgil Voiculescu have agreed to be such principal speakers; the identity of the fourth principal speaker is yet to be determined. (Professors Ocneanu and Voiculescu have said that they will lecture on 'The classification of connections and intermediate subfactors' and 'Topics in Free Entropy', respectively; Professor Haagerup has promised to give his topic soon.)

Afternoon sessions:

The twelve available 60 minute lectures in the afternoon sessions will be given by twelve of the participants (other than the principal speakers).

Some expected participants:

The following people (from outside India) have thus far expressed interest in attending the conference: Huzihiro Araki, William Arveson, Ola Bratteli, Dietmar Bisch, David Evans, Fred Goodman, Uffe Haagerup, Robin Hudson, Yasuyuki Kawahigashi, Roberto Longo, Adrian Ocneanu, Mihai Pimsner, Sorin Popa, Erling Stormer, and Dan Voiculescu.

From India, the following people (from outside Madras) may be expected to attend the conference: Rajarama Bhat, Tirthankar Bhattacharya, Subhash Bhatt, Shobha Madan, Anugraha Mahapatra, Gadadhar Misra, M.G. Nadkarni, K.R. Parthasarathy, V. Pati, Ashok Raina, Ajit Iqbal Singh, Dinesh Singh, Kalyan Sinha, and Uma Krishnan.

Other pertinent information:

Free board and lodging will be provided for about 25 foreign and about 20 Indian participants.

Limited funds are available to help defray travel expenses of some foreign participants.

More details can be obtained either on the mathematics home page of our institute, at the world wide web address

<http://www.imsc.ernet.in>

or by directly contacting V.S. Sunder (by any of the following means):

Postal address: Institute of Mathematical Sciences, Madras 600113, India.

e-mail: vss@imsc.ernet.in

telephone: (91-44-) 235 1856

Interested foreign participants should :

(a) inform V.S. Sunder no later than July 31 of their interest; and also

(b) fill in the proforma, sign it, and send it in - before the deadline highlighted above by ordinary mail (so as to enable the organisers to procure the necessary governmental permissions for the foreigners' visit).

Georgia Tech-UAB International Conference on Differential Equations and Mathematical

23-29 March 1997

School of Mathematics
Georgia Institute of Technology
Atlanta, Georgia, 30332-0160 USA

Program: This is the next in the series of conferences held alternately at Georgia Tech and the University of Alabama at Birmingham, which hosted the 1994 conference. There will be hour-long plenary lectures in the mornings, followed by parallel sessions with contributed talks in the afternoons.

Speakers will include E. Lieb (Princeton), W.M. Ni (Minnesota), B. Simon (Caltech), Ya. Sinai (Princeton), J. Taylor (Rutgers), and K. Yajima (Tokyo).

Contributed talks: The organizers are broadly soliciting contributed talks mathematical physics. The deadline for submissions and abstracts will be 15 January, 1997. Abstracts should be prepared in plain TeX (the conference will have a style sheet which will be available on its Web page or by electronic mail from icdemp@math.gatech.edu, upon request). Abstracts may be electronically or on disks, mailed to

*International Conference on Differential Equations
and Mathematical Physics
c/o Prof. E. Carlen
School of Mathematics
Georgia Institute of Technology
Atlanta, Georgia, 30332-0160 USA*

Organizing Committee: Eric Carlen (chair), Evans Harrell, Michael Loss, and Rudi Weikard (UAB).

Sponsors: The Georgia Institute of Technology, the Georgia Tech Foundation, and the Institute for Mathematics and Its Applications

Registration fee: \$86.00 if received by 15 January, 1997, otherwise \$96.00. Discounts will be available for students and certain others.

Information: Further information about the conference, accommodations, etc., is available at the address given above, or by electronic mail at icdemp@math.gatech.edu, or at the conference Web page, <http://www.math.gatech.edu/~icdemp/>

PREPRINTS (RECEIVED IN GAINESVILLE)

NOTE entries for this listing should be addressed to:

John R. Klauder, IAMP News Bulletin, Department of Mathematics, University of Florida, Gainesville, FL 32611

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EXACT SOLUTIONS FOR NULL FLUID COLLAPSE

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Rodolfo Gambini, Instituto de Física, Facultad de Ciencias, Tristan Narvaja 1674, Montevideo, Uruguay and Jorge Pullin, Center for Gravitational Physics and Geometry, Department of Physics, 104 Davey Lab, The Pennsylvania State University, University Park, PA 16802
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AN AXIOMATIC APPROACH TO QUANTUM GAUGE FIELD THEORY

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THE GEOMETRY OF CRITICAL PERCOLATION AND CONFORMAL INVARIANCE

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COSMIC MICROWAVE BACKGROUND ANISOTROPIES FROM THE REES-SCIAMA EFFECT IN $\Omega_0 \leq 1$

J. Fernando Barbero and Michael P. Ryan, Jr., Center for Gravitational Physics and Geometry, The Pennsylvania State University, University Park, PA 16802
MINISUPERSPACE EXAMPLES OF QUANTIZATION USING CANONICAL VARIABLES OF THE ASHTEKAR TYPE: STRUCTURE AND SOLUTIONS

PREPRINTS RECEIVED IN SWANSEA

- S. Albeverio¹ and A. Daletskii². ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; SFB 237; BiBoS; CERFIM (Locarno). ² Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; Institute of Mathematics, Kiev, Ukraine.
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Algebras of pseudodifferential operators in L_2 given by smooth measures on Hilbert spaces
- S. Albeverio¹, A. Daletskii² and Y. Kondratiev³. ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; SFB 237; BiBoS; CERFIM (Locarno). ² Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; Institute of Mathematics, Kiev, Ukraine. ³ BiBoS Research Centre, Universität Bielefeld, Germany; Institute of Mathematics, Kiev, Ukraine.
SFB 237 - Preprint Nr. 319, April 1996
A stochastic differential equation approach to lattice spin models with values in compact Lie groups
- S. Albeverio¹, H. Gottschalk² and J.-L. Wu³. ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; SFB 237 Essen-Bochum-Düsseldorf; BiBoS Research Centre, Bielefeld; CERFIM, (Locarno) Switzerland. ² Fakultät für Mathematik, Ruhr-Universität Bochum, Germany. ³ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; Probability Laboratory, Institute of Applied Mathematics, Academia Sinica, Beijing 100080, PR China
SFB 237 Preprint Nr. 298, February 1996.
Convolved generalised White Noise, Schwinger functions and their analytic continuation to Wightman functions
- S. Albeverio¹, H. Gottschalk and J.-L. Wu². ¹ SFB 237 Essen-Bochum-Düsseldorf; BiBoS Research Centre; Bielefeld-Bochum; CERFIM, (Locarno) Switzerland. ² On leave from Probability Laboratory, Institute of Applied Mathematics, Academia Sinica, Beijing 100080, PR China.
SFB 237 - Preprint Nr. 276, October 1995
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- S. Albeverio^{1,2,3}, H. Gottschalk¹ and J.-L. Wu^{1,2,4}. ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; ² SFB 237 Essen-Bochum-Düsseldorf, Germany; ³ BiBoS Research Centre, Bielefeld-Bochum, Germany; and CERFIM, (Locarno) Switzerland. ⁴ Probability Laboratory, Institute of Applied Mathematics, Academia Sinica, Beijing 100080, PR China.
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Models of local relativistic quantum fields with indefinite metric (in all dimensions)
- S. Albeverio^{1,2,3}, A. Hilbert^{1,2,4} and V. Kolokoltsov^{1,5}. ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; ² SFB 237 Essen-Bochum-Düsseldorf, Germany; ³ BiBoS Research Centre, Bielefeld-Bochum, Germany; and CERFIM, (Locarno) Switzerland. ⁴ Mathematics Institute, University of Warwick (England). ⁵ Moscow Institute of New Technologies, supported in part by the A. v. Humboldt-Stiftung.
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Estimates uniform in time for the transition probability of diffusions with small drift and for stochastically perturbed Newton equations
- S. Albeverio¹ and A. Khrennikov². ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; SFB 237 Essen-Bochum-Düsseldorf; BiBoS Research Centre, Bielefeld; CERFIM, (Locarno) Switzerland. ² Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; Alexander von Humboldt Fellowship.
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A regularization of quantum field Hamiltonians with the aid of p -adic numbers
- S. Albeverio¹, A. Khrennikov² and O. Smolyanov³. ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; SFB 237 Essen-Bochum-Düsseldorf; BiBoS Research Centre, Bielefeld; CERFIM, (Locarno) Switzerland. ² Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; Alexander von Humboldt Fellowship. ³ Department of Mechanics and Mathematics, Moscow State University, 119899, Moscow, Russia.
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- S. Albeverio^{1,2,3}, V.N. Kolokol'tsov^{2,4} and O.G. Smolyanov^{2,5}. ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; ² SFB 237 Essen-Bochum-Düsseldorf, Germany; ³ BiBoS Research Centre, Bielefeld-Bochum, Germany; and CERFIM, (Locarno) Switzerland. ⁴ Dep. Math. Statistics and O.R., Nottingham Trent University, Burton Street, Nottingham. ⁵ Faculty of Mechanics and Mathematics, Moscow State University, 119899, Moscow, Russia.
SFB 237 - Preprint Nr. 318, April 1996.
Représentation des solutions de l'équation de Belavkin pour la mesure quantique par une version rigoureuse de la formule d'intégration fonctionnelle de Menski
- S. Albeverio^{1,2} and P. Kurasov¹. ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; ² SFB 237 Essen-Bochum-Düsseldorf, Germany; BiBoS Research Centre, Bielefeld-Bochum, Germany; and CERFIM, (Locarno) Switzerland.
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S. Albeverio^{1,2}, L.M. Morato³ and S. Ugolini^{1,3}. ¹ Fakultät für Mathematik, Ruhr-Universität Bochum, Germany; ²SFB 237 Essen-Bochum-Düsseldorf, Germany; BiBoS Research Centre, Bielefeld-Bochum, Germany; and CERFIM, (Locarno) Switzerland. ³ Facoltà di Scienze, Università di Verona, Italy.
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S. Albeverio¹, M. Röckner², Y.-Z. Hu^{3,4} and X.Y. Zhou^{1,5}. ¹Institut für Mathematik, Ruhr-Universität Bochum, D 44780 Bochum, Germany. ² Fakultät für Mathematik, Universität Bielefeld, 33501 Bielefeld, Germany. ³ Department of Mathematics, University of Oslo, N-0316 Oslo, Norway. ⁴ Institute of Mathematical Sciences, Academia Sinica, Wuhan 430071, China. ⁵ Institute of Mathematics, Beijing Normal University, Beijing 100875, China.
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Stochastic quantization of the two-dimensional polymer measure

S. Albeverio¹, M. Röckner² and X.Y. Zhou³. ¹ Institut für Mathematik, Ruhr-Universität Bochum, D 44780 Bochum, Germany. ² Fakultät für Mathematik, Universität Bielefeld, 33501 Bielefeld, Germany. ³ Institute of Mathematics, Beijing Normal University, Beijing 100875, China.
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S. Albeverio¹ and F. Russo². ¹ Institut für Mathematik, Ruhr-Universität Bochum, D-44780 Bochum; SFB 237; BiBoS; CERFIM (Locarno). ² Université Paris-Nord, Institut Galilée, Mathématiques, av. JB Clément, F-93430 Villetaneuse. Universität Bielefeld, BiBoS, D-33501 Bielefeld.
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Stochastic partial differential equations, infinite dimensional stochastic processes and random fields: a short introduction

S. Albeverio^{1,2} and X.Y. Zhou^{2,3,4}. ¹ BiBoS; SFB 237 Essen-Bochum-Düsseldorf; CERFIM, Locarno. ² Institute of Mathematics, Ruhr-University Bochum, D-44780 Bochum, Germany. ³ Department of Mathematics, University of Bielefeld, D-33501 Bielefeld, Germany. ⁴ Department of Mathematics, Beijing Normal University, Beijing 100875, China.
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S. Albeverio^{1,2} and X.Y. Zhou^{1,3}. ¹ Fakultät für Mathematik, Ruhr-Universität, D 44780 Bochum, Germany. ² SFB 237 Essen-Bochum-Düsseldorf; BiBoS Research Centre, D 33615 Bielefeld, Germany; CERFIM, Locarno (Switzerland). ³ Department of Mathematics, University of Bielefeld, D-33501 Bielefeld, Germany. Department of Mathematics, Beijing Normal University, Beijing 100875, China.
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A new convergent lattice approximation for the ϕ_2^4 -quantum field

N. Angelescu¹, J.G. Brankov² and A. Verbeure³. Instituut voor Theoretische Fysica, K.U. Leuven Celestijnenlaan 200 D, B-3001 Leuven, Belgium. ¹ Department of Theoretical Physics, Institute for Atomic Physics, P.O. Box MG-6, Bucharest, Romania. ² Institute of Mechanics, Bulgarian Academy of Sciences, Acad. G. Bonchev Str., bl. 4, Sofia 1113, Bulgaria. ³ e-mail: André.Verbeure@fys.kuleuven.ac.be
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General one-particle fluctuations of the ideal Bose gas

J.A. de Azcárraga^{*}, A.M. Perelomov[†] and J.C. Pérez Bueno[‡]. Departamento de Física Teórica and IFIC, Centro Mixto Univ. de Valencia-CSIC, 46100 Burjassot (Valencia), Spain. ^{*} E-mail: azcarrag@evalvx.ific.uv.es. [†] On leave of absence from Institute for Theoretical and Experimental Physics, 117259 Moscow, Russia; e-mail: perelomo@evalvx.ific.uv.es. [‡] E-mail: pbueno@lie.ific.uv.es
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*Contractions, Hopf algebra extensions and covariant differential calculus**
* To Jurek Lukierski on his 60th anniversary.

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* To appear in J.Phys.A.

J.A. de Azcárraga[†] and F. Rodenas^{†‡}. [†] Departamento de Física Teórica and IFIC, Centro Mixto Univ. de Valencia-CSIC, 46100 Burjassot (Valencia), Spain. [‡] Departamento de Matemática Aplicada, Universidad Politécnica de Valencia, E-46071 Valencia, Spain.
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J.A. de Azcárraga[†] and F. Rodenas^{†‡}. [†] Departamento de Física Teórica and IFIC, Centro Mixto Univ. de Valencia-CSIC, 46100 Burjassot (Valencia), Spain. [‡] Departamento de Matemática Aplicada, Universidad Politécnica de Valencia, E-46071 Valencia, Spain.
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* Lecture delivered at the 1995 Quantum Groups and Quantum Spaces Banach conference, Warsaw. To appear in the proceedings, R. Budzynski and S. Zakrzewski eds., Banach Centre publications.

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Solving Salpeter's equation

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* Senior Research Associate at the National Fund for Scientific Research (Belgium). [†] Researcher at the Inter-University Institute for Nuclear Sciences (Belgium).
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Using Salpeter's propagator for solving the Bethe-Salpeter equation

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Preprint TAUP-2149-94, LA-UR-96-XX, IAS-SNS-96/32.
A new relativistic high temperature Bose-Einstein condensation

R.S Dunne¹, A.J. Macfarlane¹, J.A. de Azcárraga² and J.C. Pérez Bueno². ¹Department of Applied Mathematics & Theoretical Physics, University of Cambridge, Cambridge CB3 9EW. ²Departamento de Física Teórica and IFIC, Centro Mixto Universidad de Valencia-CSIC, E-46100-Burjassot (Valencia) Spain.
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*Supersymmetry from a braided point of view**
* To appear in Phys.Lett.B.

V. Kanovei^{*} and M. Reeken[†]. Institut für Mathematik, Ruhr-Universität-Bochum. ^{*} Department of Mathematics, Moscow Transport Engineering Institute and Moscow State University, Moscow, 101475, Russia; partially supported by AMS grants in 1993 and 1994 and DFG grants in 1994.
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SFB237 - Preprint Nr. 301, December 1995.
Internal approach to external sets and universes. Part 1. Bounded set theory

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SFB237 - Preprint Nr. 302, December 1995.
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Internal approach to external sets and universes. Part 3. Partially saturated universes
- V. Kanovei* and M. Reeken†. Institut für Mathematik, Ruhr-Universität-Bochum. *Department of Mathematics, Moscow Transport Engineering Institute and Moscow State University, Moscow, 101475, Russia; partially supported by AMS grants in 1993 and 1994 and DFG grants in 1994. †Bergische Universität - GHS Wuppertal, Wuppertal 42097, Germany. SFB237 - Preprint Nr. 299, December 1995.
Loeb measure from the point of view of a coin flipping game
- V. Kanovei* and M. Reeken†. Institut für Mathematik, Ruhr-Universität-Bochum. *Department of Mathematics, Moscow Transport Engineering Institute and Moscow State University, Moscow, 101475, Russia. †Department of Mathematics, University of Wuppertal, Wuppertal 42097, Germany. SFB237 - Preprint Nr. 300, December 1995.
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- A. Khrennikov*. Institut für Mathematik, Ruhr-Universität-Bochum, D-44780, Bochum, Germany. *Alexander von Humboldt Fellowship, on leave from Moscow Institute of Electronic Engineering, 103498. SFB 237 - Preprint Nr. 295, January 1996.
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- A. Khrennikov*. Institut für Mathematik, Ruhr-Universität-Bochum, D-44780, Bochum, Germany. *On leave from Moscow Institute of Electronic Engineering, 103498. SFB 237 - Preprint Nr. 288, November 1995.
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- A. Khrennikov*. Institut für Mathematik, Ruhr-Universität-Bochum, D-44780, Bochum, Germany. *Alexander von Humboldt Fellowship, on leave from Moscow Institute of Electronic Engineering, 103498. SFB 237 - Preprint Nr. 315, April 1996.
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Reality of negative probabilities and reality of reality

- A. Khrennikov*. Institut für Mathematik, Ruhr-Universität-Bochum, D-44780, Bochum, Germany. *Alexander von Humboldt Fellowship, on leave from Moscow Institute of Electronic Engineering, 103498. SFB 237 - Preprint Nr. 297, February 1996.
Time to change Kolmogorov's axiomatics
- J.T. Lewis¹, C.-E. Pfister², R. Russell¹ and W.G. Sullivan^{1,3}. ¹Dublin Institute for Advanced Studies, 10 Burlington Road, Dublin 4, Ireland. ²École Polytechnique Fédérale, Département de Mathématiques, CH-1015 Lausanne, Switzerland. ³University College, Department of Mathematics, Belfield, Dublin 4, Ireland. Preprint DIAS-STP-95-41
Reconstruction sequences and equipartition measures: an examination of the asymptotic equipartition property
- L. O'Raiheartaigh, I. Sachs and C. Wiesendanger, Dublin Institute for Advanced Studies, 10 Burlington Road, Dublin 4. Preprint Nr. DIAS-STP-96-06.
*Weyl-gauging and curved-space approach to scale and conformal invariance**
* Talk presented at the Meeting 70 Years of Quantum Mechanics held at the Indian Statistical Institute, Calcutta, 29th January - 2nd February 1996.