

INTERNATIONAL ASSOCIATION OF MATHEMATICAL PHYSICS



IAMP NEWS BULLETIN

MAY 1992

---

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Harvard University  
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University of Florida  
Gainesville, FL 32611, USA*

## News from the President

The main development in IAMP over the last few months has been crystallization of the plans for the next Congress. The Executive Committee voted to hold the meeting in Paris, and the period July 18 - 23, 1994 was ultimately chosen. Fortunately I spent two months in Paris myself during February and March, and met both with the Local Committee and the Scientific Committee (about which I say more later).

The Local Committee for the Congress is chaired by Daniel Iagolnitzer, who has done an extraordinary amount of groundwork in preparing the Paris proposal. The committee has brought a large and diverse group of mathematicians and physicists from a number of Paris institutions and departments. It consists of J.M. Bismut\*, J.P. Bourguignon, A. Boutet de Monvel\*, E. Brezin, P. Collet, M. Combesure, A. Connes, F. David, K. Gawedzki, J. Ginibre, D. Iagolnitzer\*, J. Iliopoulos, C. Itzykson, B. Julia\*, G. Lebeau, Y. Meyer, P. Mitter, A. Neveu, V. Rivasseau\*, R. Sénéor\*, and A. Voros, where \* denotes members of the Executive Subcommittee. The conference secretariat will be located at Saclay, at Daniel Iagolnitzer's address: Service de Physique Théorique, C.E. Saclay, F91191 Gif-sur-Yvette, France. The fax number is 33(1)69.08.81.20.

During my stay in Paris, I visited five potential conference sites. Eventually the Local Committee chose to have the conference at the Ecole Polytechnique in Palaiseau, except for one day when we will meet at the historic Grand Amphitheater of the Sorbonne. That day we also expect to have a private concert in the Sorbonne, followed by a reception. The local committee has planned many other potential activities during the Congress, as well as the following week. There is every reason to believe that the 1994 IAMP Congress will both be interesting and well-attended.

Once the IAMP Executive Committee had chosen the Paris site in January, I appointed a Scientific Committee to concentrate on formulating plans for the Scientific program. This committee consists of Jürg Fröhlich, Daniel Iagolnitzer (who will act as secretary), David Ruelle, Yakov Sinai, and myself. The Scientific Committee had a preliminary meeting during March at the IHES in Bures-sur-Yvette, since all five members of the committee happened by chance to be visiting Paris.

The Scientific Committee will begin its serious deliberations toward the start of next year, and *written* input to the committee is welcome. Members of the Association who wish to communicate with the Scientific Committee should write directly to me, and I will distribute these remarks to the rest of the Committee. Regular mail should be sent to me at Harvard. My e-mail address for IAMP business is IAMP@math.harvard.edu or IAMP@humal.bitnet. I can also be reached by FAX at 617-495-5132. Until July 25, I will be travelling abroad, but letters and messages will eventually reach me.

Both the Local Committee and the Scientific Committee are very enthusiastic to try to make the Paris Congress as good a meeting as possible. We hope that there will be wide participation by members of the Association, and that this meeting will be beneficial both to our community and also bring attention to mathematical physics in the worlds of physics and of mathematics at large.

*Arthur Jaffe*

## Tribute to M.K. Polivanov (1930-1992)

Michael Konstantinovich Polivanov died suddenly in Moscow on January 23, 1992. A distinguished mathematical physicist (a student of N.N. Bogolubov), one of the founders and enthusiasts of the International Association of Mathematical Physics, long time member of the advisory board of Communications in Mathematical Physics, current deputy Editor-in-Chief of Theoretical and Mathematical Physics, Professor, head of the quantum field theory division of the Steklov Mathematical Institute in Moscow and a teacher of a number of graduate students there, Rector of the recently founded Independent Moscow University, Polivanov will be mostly remembered among his friends for his personality. One of the precious few survivors of the aristocratic brand of the Russian intelligentsia whose family stayed in Russia after the revolution (few people know that today's musical high school in Moscow is housed at the former Polivanov College). Polivanov was a true gentleman in the primary meaning of the word. Grown up with the verses of the Blok and Pasternak ("Doctor Zhivago" was turned from a manuscript into a typewritten novel in Polivanov's home), a confidant of Solzhenitsyn and of Nadezhda Mandelstam (and an author of memoirs about her), he would never show off or try to embarrass his less cultured colleagues. Polivanov carried and generously shared human virtues through the years of Bolshevik terror and modern cynicism. We shall miss him.

*Ivan Todorov*

FIRST ANNOUNCEMENT

ORGANIZING COMMITTEE:

R. Kotecký (Program Chairman),  
I.M. Havel, I. Malypetr,  
M. Zahradník, M. Zeithamlová

**CTS**  
WORKSHOP No. 2

**Phase Transitions:  
Mathematics,  
Physics,  
Biology, . . .**

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Prague, Czechoslovakia  
June 1-5, 1992

Center for Theoretical Study, Charles University  
Prague

CTS Organizing Secretary  
Agency Action M  
Milena Zeithamlová  
Kazašská 1426  
101 00 Praha 10  
Czechoslovakia

**Phase Transitions:  
Mathematics,  
Physics,  
Biology, . . .**

The workshop will be devoted to the theory of phase transitions and its interdisciplinary aspects. More specifically, the idea is to discuss the notion of Gibbs state and its different applications. While the core will be in mathematical physics, such topics as image processing, communication systems, neural networks, biological systems etc. will be included.

The workshop is loosely linked with previous symposia on random fields in Esztergom (1979), Kőszeg (1984), Treboň (1987).

The idea for the meeting stemmed from discussions with R. L. Dobrushin, J. Fröhlich, C. Newman and G. Parisi.

Up to now, the following have given preliminary acceptance to participate in the workshop:

- R. L. Dobrushin (Moscow)
- P. Gacz (Boston University)
- S. Geman (Brown University)
- B. Gidas (Brown University)
- A. Klein (UCLA Irvine)
- J. Lebowitz (Rutgers University)
- H. Narhofer (University of Vienna)
- C. Newman (Courant Institute)
- E. Olivieri (University of Rome)
- G. Parisi (University of Rome)
- E. Presutti (University of Rome)
- E. Shakhnovich (Harvard University)
- S. B. Shlosman (Moscow)
- S. Varadhan (Courant Institute)
- A. Wightman (Princeton University)

Please complete the attached touch Reply Card as preliminary information for the organizers and return to the Secretary of the Organizing Committee at your earliest convenience.

**CTS**

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I wish to attend the workshop. Please send me further details and registration form: \_\_\_\_\_

I would like to make a presentation: \_\_\_\_\_  
yes / no

The expected title of subject: \_\_\_\_\_

Number of accompanying persons: \_\_\_\_\_

I would also suggest sending this First Announcement to: \_\_\_\_\_



## INTERNATIONAL CENTRE FOR MATHEMATICAL SCIENCES

1991/1992 Research Programme on Mathematical Problems in Materials Science

### Continuum Models for the Microstructure of Crystals

8th to 13th June 1992  
Heriot-Watt University, Edinburgh  
with the support of Standard Life

This international conference will concern the continuum modelling of microstructures and phase transitions in crystals from the points of view of continuum mechanics, the calculus of variations, experiment, and computation. The speakers are leading mathematicians, materials scientists, and physicists working on problems of common interest, who will present new developments in the field. The meeting forms part of a one-month period of concentration on the microstructure of crystals during June 1992.

Speakers are expected to include:

K. Bhattacharya ( <i>Courant Institute</i> )	S. Müller ( <i>Bonn</i> )
M. Chipot ( <i>Metz</i> )	G. Parry ( <i>Bath</i> )
N.B. Firoozye ( <i>Heriot-Watt/Minnesota</i> )	A.L. Roitburd ( <i>Maryland</i> )
I. Fonseca ( <i>Carnegie-Mellon</i> )	P. Rybka ( <i>Warszawa</i> )
R.D. James ( <i>Minnesota</i> )	D. Schryvers ( <i>Antwerp</i> )
A. Khachaturyan ( <i>Rutgers</i> )	J. Sethna ( <i>Cornell</i> )
D. Kinderlehrer ( <i>Carnegie-Mellon</i> )	V. Šverák ( <i>Heriot-Watt/Prague</i> )
R.V. Kohn ( <i>Courant Institute</i> )	P.J. Swart ( <i>Cornell</i> )
M. Luskin ( <i>Minnesota</i> )	

Limited financial support is available for U.K. participants. Preference may be given to younger mathematicians. Some funds may also be available for participants from developing countries.

For further information and application forms, contact:

Dr. Nick Firoozye  
Department of Mathematics  
Heriot-Watt University  
Riccarton, Edinburgh, EH14 4AS, United Kingdom  
(tel. no. 44-(0)31-451-3253 or 3250)  
(fax no. 44-(0)31-451-3249)  
(e-mail: icms@cara.ma.hw.ac.uk).

Organising committee:

J.M. Ball (*Heriot-Watt*), J.W. Christian (*Oxford*), R.D. James (*Minnesota*), O. Penrose (*Heriot-Watt*)

The International Centre for Mathematical Sciences is a joint project of Edinburgh and Heriot-Watt Universities, in co-operation with the City of Edinburgh District Council, Lothian and Edinburgh Enterprise, and ICTP, Trieste.

Scientific Advisory Board: E.B. Dynkin, M. Gromov, Feng Kang, P.D. Lax, J.-L. Lions, J. Palls, D. Quillen, H. Weinberger.

Please Post Prominently

### Workshop on Dirichlet Forms and Their Applications

On the occasion of the CIME Course on Dirichlet Forms, which will take place from June 8 to June 19 at Villa Monastero in Varenna (on the Como Lake), a workshop on "Application of Dirichlet Forms to Singular Diffusions and Partial Differential Equations" will take place in Villa Monastero from June 16 to June 19 in the afternoon.

Besides the Lecturers of the Course, Profs. S. Albeverio (Bochum), M. Biroli (Milano), Ma Zhiming (Academia Sinica), S.R.S. Varadhan (Courant Institute) have accepted to take part in the Workshop.

The Workshop is part of the activities sponsored by the CNR Research program in Mathematics "Irregular variational problems and discontinuous structures".

Gianfausto Dell'Antonio  
Dip. di Matematica,  
Università di Roma I  
and SISSA Trieste

XXIIème ECOLE D'ETE DE CALCUL DES PROBABILITES  
SAINT-FLOUR (Cantal)  
8 - 25 Juillet 1992

CONFERENCIERS INVITES

- D. BAKRY, Professeur à l'Université Paul Sabatier, TOULOUSE  
"L'hypercontractivité et son utilisation en théorie des semigroupes"
- R.D. GILL, Professeur à l'Université d'UTRECHT, Pays-Bas  
"Topics from survival analysis"
- S.A. MOLCHANOV, Professeur à l'Université de Californie à IRVINE, Californie  
"Stationary random media : homogeneization, localization and intermittency"

INSCRIPTIONS et RENSEIGNEMENTS COMPLEMENTAIRES

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Mathématiques Appliquées  
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Telefax 73.40.70.64  
E-Mail : stflour@ucfma.uucp

The State of Matter (Copenhagen, July 30 - Aug. 1, 1992)

A meeting to celebrate Elliott H. Lieb's sixtieth birthday

SECOND ANNOUNCEMENT

March 3, 1992

Dear Colleague

The celebratory conference The State of Matter will take place in Copenhagen, July 30 - Aug. 1, 1992. It is intended to be a fine scientific meeting, in which we shall celebrate Elliott H. Lieb's sixtieth birthday.

Enclosed is the list of speakers. The meeting's plan is as follows:

- Wednesday, July 29th Day of arrival, an informal welcome reception.
- Thursday, July 30th First day of the meeting. Morning and afternoon sessions. Lunch at the University. Dinner individually arranged in town.
- Friday, July 31st Second day of the meeting. Morning and afternoon sessions, lunch as above. Evening: birthday banquet.
- Saturday, August 1st Last day of the meeting. Morning session. The meeting disperses at noon.

In addition to the invited talks, display space will be made available for qualified poster presentations. To register for a poster session, please send the title and an abstract to: M. Aizenman, Jadwin Hall, P.O. Box 708, Princeton, NJ 08544, USA.

Registration: The meeting's registration fee is \$30, and the banquet charge is \$40. Hotel accommodations range in price: very basic accommodations available at \$45 (per night), economical \$60, standard international style \$100, and luxurious \$200. The price situation may be improved with large block reservations. It is important, therefore, to place an early reservation. (Pre-payments can be made in any convertible currency.)

To register, and make a hotel reservation, please send the enclosed registration form to: Prof. Thor A. Bak, Kemisk Ill, H.C. Ørsted Institute, Universitetsparken 5, 2100 Copenhagen Ø, DENMARK. Further information: location, etc., will be sent to those registered.

Best wishes! We hope to see you in Copenhagen.

Sincerely yours,

*Michael Aizenman*

Michael Aizenman

The Organizing Committee:

M. Aizenman, G. Dell'Antonio, T.A. Bak, M. Flato, G.K. Pedersen, T. Spencer, and W. Thirring.

The State of Matter (Copenhagen, July 30 - Aug. 1, 1992)

A meeting to celebrate Elliott H. Lieb's sixtieth birthday

List of speakers (\*=tentative)

- I. Affleck \* (UBC, Vancouver) One-dimensional quantum magnetism  
F. Almgren (Princeton Univ.) Growing crystals mathematically and computationally  
J. Feldman (UBC, Vancouver) Constructive Many Body Theory  
M.E. Fisher \*(Univ. Maryland) (TBA)  
J. Fröhlich (ETH, Zürich) Local gauge invariance in non-relativistic quantum mechanics (with applications to condensed matter physics)  
G. Gallavotti \*(Rome) (TBA)  
K. Gawędzki (IHES, France) Quantum group symmetries in physics  
J. Lebowitz (Rutgers Univ.) Going beyond the thermodynamic limit for Coulomb systems  
H. Narnhofer (Vienna Univ.) Recent Developments in Entropy Theory  
R. Seiler (TU, Berlin) Adiabatic Dynamics (/Quantum Hall effect)  
B. Simon (Caltech) Review: contributions of E.H. Lieb to Statistical Mechanics  
Ya. Sinai \* (Landau Inst.) (TBA)  
J.-P. Solovej (Princeton Univ.) Matter under the influence of extremely strong magnetic fields  
W. Thirring (Vienna Univ.) Review: Thomas-Fermi theory, semiclassical bounds, and the Stability of Matter  
H.-T. Yau (Courant Institute) Hydrodynamical limit and fluctuations in Ginzburg-Landau models

For further information, and to register for a poster session, please contact: M. Aizenman, Princeton Univ. Jadwin Hall, Princeton NJ 08544. (E-mail: aizenman@phoenix.princeton.edu)

The Organizing Committee: M. Aizenman, G. Dell'Antonio, T.A. Bak, M. Flato, G.K. Pedersen, T. Spencer, and W. Thirring.

To: **Would-be Participants in the Celebratory Meeting**

**"The State of Matter"** (Copenhagen, July 30 - Aug.1, 1992)

(A fine scientific meeting, in which we shall celebrate Elliott H. Lieb's sixtieth birthday.)

REMINDER

In order to assure satisfactory hotel accommodation, please send - without any further delay - the registration form to Prof. Thor Bak. It is recommended to send both a FAX transmission (the number is listed on the form) and a regular letter with the prepayment check, indicating there that this is a follow up - to avoid double booking.

A copy of the registration form is reproduced here. If you are interested in receiving again the "second announcement" please request it in a reply to this message.

We are looking forward to seeing you in Copenhagen.

Yours,

*Michael Aizenman*

Registration for "The State of Matter" (Copenhagen, July 30 - Aug. 1, 1992)

To register for the meeting please fill this form and send along with a pre-payment check to Prof. Thor A. Bak (address given below). Further information on the meeting will be sent to those registered.

a) Name \_\_\_\_\_

Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

b) To register for E.H. Lieb's birthday banquet (Friday, July 31) please check: \_\_\_\_\_  
 number of participants (\$40 per person): \_\_\_\_\_

c) Hotel reservations. The prices are approximate, reflecting general categories, and are subject to change. There are no hotels within walking distance, but good bus transportation is available. Please mark in the appropriate place for which of the nights, out of {Wed. 7/29, Thurs. 7/30, Fri. 7/31 (if desired, also Sat. 8/1)}, are reservations required.

Least expensive (very basic) \$45 per night \_\_\_\_\_

Economical (room without private bath) \$60 per night \_\_\_\_\_

Standard International Style (single room with bath) \$100 per night \_\_\_\_\_

Luxurious \$200 per night \_\_\_\_\_

d) Pre-payment (required): registration fee \_\_\_\_\_ \$30.  
 banquet, number of participants × \$40 = \_\_\_\_\_  
 hotel one night prepayment (at the requested rate) \_\_\_\_\_  
 Total: \_\_\_\_\_

Please enclose a check (in US\$ or any convertible currency), payable to: Prof. Thor A. Bak (Re: The State of Matter).

Mail to: Prof. Thor A. Bak  
 Kemisk III  
 H.C. Ørsted Institute  
 Universitetsparken 5  
 2100 Copenhagen Ø  
 DENMARK

(FAX: (45) 39.27.38.11)



INTERNATIONAL CENTRE FOR MATHEMATICAL SCIENCES

KINETICS OF PHASE TRANSITIONS  
 EDINBURGH, 10-14 AUGUST 1992

As part of the ICMS research programme, Mathematical Problems in Materials Science, this international conference will bring together leading mathematicians, materials scientists and physicists involved with the kinetics of phase transitions, a field which offers exciting possibilities for the prediction of material behaviour and the design of new materials.

Topics to be considered will include spinodal decomposition and coarsening, elastic interactions, the derivation of kinetic equations and their mathematical properties, and the use of computers. Speakers will include:

*K Binder (Mainz)*  
*J W Cahn (NIST)*  
*C M Elliott (Sussex)*  
*P C Fife (Utah)*  
*J Hyde (Oxford)*  
*W C Johnson (Carnegie-Mellon)*

*J L Lebowitz (Rutgers)*  
*T Miyazaki (Nagoya)*  
*R L Pego (Maryland)*  
*G R Purdy (McMaster)*  
*M Schatzman (Lyon)*

Proposals for short talks are invited. Limited funds are available for UK participants, with preference given to young mathematicians. Some support also may be available for participants from developing countries.

The conference takes place just before the Edinburgh International Arts Festival 1992, one of the most prestigious cultural events of Europe, which will be held from 16 August through 5 September.

Rooms in hotels or guesthouses can be reserved for participants. Enquiries and requests for application forms are invited from intending participants, and should be sent to:

ICMS  
 Heriot-Watt University  
 Riccarton  
 Edinburgh EH14 4AS  
 United Kingdom

Telephone (031) 451 3250  
 Fax (031) 451 3249  
 e-mail icms@cara.ma.hw.ac.uk

Organizing committee:  
*J M Ball (Heriot-Watt)*  
*J W Christian (Oxford)*  
*R D James (Minnesota)*  
*O Penrose (Heriot-Watt)*

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Scientific Advisory Board: E D Dynkin, M Gromov, Feng Kang, P D Lax, J-L Lions, J Pele, D Gullen, H Weinberger.

# European School of Group Theory

The European School of Group Theory provides high level courses for young researchers on recent developments in Group Theory. Each year the School is held in a different European country. The 1992 session will take place on the campus of the University of Twente, Enschede, The Netherlands.

The scientific program will consist of four main courses, some additional lectures by other specialists and a seminar, in which the participants can present their own work.

## Main Courses:

O. Mathieu  
Infinite dimensional Lie algebras

H. Schlichtkrull  
Semisimple symmetric spaces

T.A. Springer  
Representations of Weyl groups

L. Takhtajan  
Quantum groups

## Organizing Committee

E.P. van den Ban, G. van Dijk, G.J. Heckman,  
G.F. Helminck, T.H. Koornwinder

## Information

Further information can be obtained from:

European School of Group Theory  
attn. Mrs. N. Mitrovic, CWI, P.O. Box 4079  
1009 AB Amsterdam, The Netherlands  
email: nada@cwi.nl



August 24 - September 4 1992

University of Twente  
Enschede, The Netherlands

## STOCHASTICS AND QUANTUM MECHANICS

Swansea, UK Summer 1990  
edited by A. Truman & I.M. Davies (Univ. College of Swansea)

This volume contains papers which were presented at a series of short meetings collectively entitled "Stochastics and Quantum Mechanics" held in Swansea over the summer of 1990. The topics covered include diffusion processes, stochastic mechanics, large deviations and semiclassical analysis of Feynman Kac formulae. Applications are given to the sample path properties of diffusions, statistical mechanics, nonlinear reaction diffusion equations and Wiener-Hopf theory. The papers are in the main immediately accessible to workers in the field and they provide a reasonable coverage of current areas of interest centering around uses of probabilistic methods in mathematical physics.

Readership: Mathematicians and mathematical physicists

*Published by World Scientific Press*

*Publication date: May 1992*

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by G. Kaiser

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DIAS-STP-91-

- 20: M. VANDYCK, & H. SHANAHAN: On a multipole expansion for instantons. *Class. and Quantum Gravity* 8(1991)2035-2048.
- 21: M. VANDYCK, & H. SHANAHAN: On a multipole expansion for instantons Part II:  $S^1 \times R^3$  instantons. *Class. and Quantum Gravity* 8(1991)2049-2055.
- 22: L. FEHÉR:  $W$ -algebras of generalized Toda theories. *Proc. First Inter. A.D. Sakharov Conf. on Physics, Moscow, 1991*
- 23: L. FEHÉR, & P. HORVÁTHY: Isopin-dependent  $O(4,2)$  symmetry of self-dual Wu-Yang monopoles.
- 24: B.P. DOLAN, & C. NASH: Zeta function continuation and the Casimir energy on odd and even dimensional spheres.
- 25: MICHAEL P. TUITE: A generalised Conway-Norton relationship between the monster and Conway groups.
- 26: B. PIETTE, T. TCHRAKIAN, & W.J. ZAKRZEWSKI: A class of two dimensional models with extended structure solutions.
- 27: D.H. TCHRAKIAN, & H.J.W. MÜLLER-KIRSTEN: A (2+1)-dimensional model with instanton and sphaleron solutions.
- 28: N.G. DUFFIELD: Local mean-field Markov processes: an application to message switching networks. (To appear in *Probability and Related Fields*)

- 29: L. FEHÉR, L. O'RAIFEARTAIGH, P. RUELLE, I. TSUTSUI, & A. WIPF: On the general structure of Hamiltonian reductions of the WZNW theory.
- 30: M. LAVELLE, & D. MCMULLAN: Gauge fixing, unitarity and phase space path integrals.
- 31: F. BENATTI: On some Hamiltonian models of Brownian motion.
- 32: F. BENATTI: Deterministic quantum noise and Kolmogorov systems.
- 33: M.A. VANDYCK: A remark on the Twin "Paradox". ( To appear in *Foundations of Physics Letters*)
- 34: E. BUFFET, A. PATRICK, & J.V. PULÉ: Directed polymers on trees: a Martingale approach.
- 35: N.G. DUFFIELD, & R.F. WERNER: Local dynamics of mean-field quantum systems.
- 36: Y. KUBYSHIN, D. O'CONNOR, & C.R. STEPHENS: Dimensional crossover from non-renormalizability to renormalizability.
- 37: Y. KUBYSHIN, D. O'CONNOR, & C.R. STEPHENS: Dimensional crossover, the renormalization group and finite size scaling. *Proc. RG '91, J.I.N.R. Dubna 1991 Editor D.V. Shirkov et al.*
- 38: J. MCCONNELL: The electron in physics and chemistry 1897-1935.
- 39: J. GOUGH, & J.V. PULÉ: The spherical model of Bose-Einstein condensation.
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- 43: L. O'RAIFEARTAIGH: W-algebras.
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- L.-H. Gwa<sup>1</sup> and H. Spohn<sup>2, 1</sup> Department of Mathematics, Rutgers University, New Brunswick, NJ 08903, USA. <sup>2</sup> Theoretische Physik, Universität München Theresienstr. 37, D-8000 München 2, Germany.  
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- A. Hof \*, Eidgenössische Technische Hochschule Zürich, Departement Mathematik, ETH-Zentrum, Sälimstrasse 101, 8092 Zürich, Switzerland. E-mail: hof@math.ethz.ch. \* Prepared and written at Institute for Theoretical Physics, University of Groningen, The Netherlands.  
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*Statistical Mechanics of Terrestrial Ecosystems\**  
\* Work supported in part by BMFT, Bonn, Germany, under project no.OEF 2019-3, part PM 5. The content is due to the author.
- J. Messer, Institut für Theoretische Physik der Universität Göttingen, Bunsenstrasse 9, D-W-3400 Göttingen, Germany (present postal address), and Sektion Physik, Theoretische Physik, Universität München.  
Preprint No: TDSMTES -4/ 8.12.1991  
*Fokker-Planck Dynamics of Forestal Systems\**  
\* Work supported in part by BMFT, Bonn, Germany, under project no.OEF 2019-3, part PM 5. The content is due to the author.
- G.M. O'Brien<sup>1</sup> and D.H. Tchrakian<sup>1,2\*</sup>. <sup>1</sup> Centre de Physique Théorique, Ecole Polytechnique, F-91128 Palaiseau Cedex, France. <sup>2</sup> School of Theoretical Physics, Dublin Institute for Advanced Studies, 10 Burlington Road, Dublin 4, Ireland. \* On leave from Department of Mathematical Physics, St. Patrick's College Maynooth, Ireland.  
Preprint No: DIAS-STP-92-06  
*A Non-Abelian Higgs Model with Instantons and Sphaleron*
- D. O'Connor<sup>1</sup>, C.R. Stephens<sup>2</sup> and F. Freire<sup>3, 1</sup> D.I.A.S., 10 Burlington Road, Dublin 4, Ireland. <sup>2</sup> Department of Physics, Imperial College, London, SW7 2AZ and \*Inst. for Theo Physics, Rijksuniversiteit Utrecht, Princetonplein 5, P.O. Box 80.006, 3508 TA Utrecht, The Netherlands. <sup>3</sup> Department of Physics, Imperial College, London, SW7 2AZ. \* Present address.  
Preprint No: DIAS-STP-92-02  
*Dimensional Reduction and the Non-triviality of  $\lambda\phi^4$  in Four Dimensions at High Temperature*
- G.R.W. Quispel, Department of Mathematics, La Trobe University, Melbourne, Australia.  
Mathematics Research Paper No.91-15, October 1991.  
To appear in Proceedings of the 1991 ANU Summer School on Nonlinear Dynamics and Chaos, R.L. Dewar (ed.), World Scientific, Singapore, 1992.  
*Chaos and Time Reversal Symmetry: An Introduction*
- G.R.W. Quispel and F.W. Nijhoff, Department of Mathematics, La Trobe University, Melbourne, Australia.  
Mathematics Research Paper No.91-16, December 1991.  
To appear in Physics Letters A, in press.  
*Integrable Two-Dimensional Quantum Mappings*
- J.A.G. Roberts and G.R.W. Quispel, Department of Mathematics, La Trobe University, Melbourne, Australia.  
Mathematics Research Paper No.91-14, October 1991. Amsterdam ITFA91-32.  
*Chaos and Time-Reversal Symmetry*

M.V. Saveliev\*, Laboratoire de Physique Théorique ENSLAPP, ENS Lyon,  
46 Allée d'Italie 69364, Lyon Cedex 07, France.

\* On leave of absence from the Institute for High Energy Physics,  
Protvino 142284, Moscow Region, Russia.

Preprint No: ENSLAPP-L-356/91, November 1991.

*On the Integrability Problem of the Continuous Long Wave  
Approximation of the Toda Lattice*

D.H. Tchrakian<sup>1,2</sup> and H.J.W. Müller-Kirsten<sup>3</sup>. <sup>1</sup> Department of  
Mathematical Physics, St. Patrick's College, Maynooth, Ireland.

<sup>2</sup> School of Theoretical Physics, Dublin Institute for Advanced  
Studies, 10 Burlington Road, Dublin 4, Ireland. <sup>3</sup> Department of

Physics, University of Kaiserslautern, Postfach 3049, D-6750  
Kaiserslautern, Germany.

Preprint No: DIAS-STP-92-07

*A (2+1)-Dimensional Model with Instanton and Sphaleron  
Solutions*

S. Twareque Ali<sup>1</sup>, J.-P. Antoine<sup>2</sup> and J.-P. Gazeau<sup>3</sup>, <sup>1</sup> Department of  
Mathematics and Statistics, Concordian University, Montreal, Qué.,  
Canada H4B 1R6, <sup>2</sup> Institut de Physique Théorique, Université

Catholique de Louvain, B-1348 Louvain-la-Neuve, Belgium,  
<sup>3</sup> Laboratoire de Physique Théorique et Mathématique, Université

Paris VII, 2 Place Jussieu, F-75251 Paris Cedex 05, France.

Preprint No: UCL-IPT-91-22, December 1991.

*Continuous Frames in Hilbert Space*

A. Verbeure and V.A. Zagrebnov\*, Instituut voor Theoretische Fysica,  
Katholieke Universiteit Leuven, Celestijnenlaan 200 D, B-3001  
Leuven, Belgium.

\* On leave of absence from Laboratory of Theoretical Physics, Joint  
Institute for Nuclear Research, Dubna 141980, CIS (Russia).

Preprint No: KUL-TF-92/4.

*Phase Transitions and Algebra of Fluctuation Operators in an  
Exactly Soluble Model of a Quantum Anharmonic Crystal*

## Announcements of Positions/Job Openings

1. Post-doctoral position in statistical physics (phase transitions, percolation, random systems, fractals).  
Contact: Amnon Aharony, School of Physics & Astronomy, Tel Aviv University, Tel Aviv 69978, Israel.  
Phone: 972-3-6408558; fax: 972-3-6422979  
email: aharony@ccsg.tau.ac.il
2. Postdoctoral Openings in condensed matter theory.  
Contact: Gordon Baym, David Campbell, Nigel Goldenfeld, Yoshitsugu Oono at the Department of Physics, University of Illinois at Urbana-Champaign, 1110 West Green Street, Urbana, IL 61801-3080, USA.
3. University of Colorado at Boulder, Faculty Appointments Program in Applied Mathematics, Boulder, CO 80309, USA.
4. Brown University, Division of Applied Mathematics, Providence, RI 02912, USA.

## INTERNATIONAL ASSOCIATION OF MATHEMATICAL PHYSICS



### IAMP NEWS BULLETIN

OCTOBER 1992

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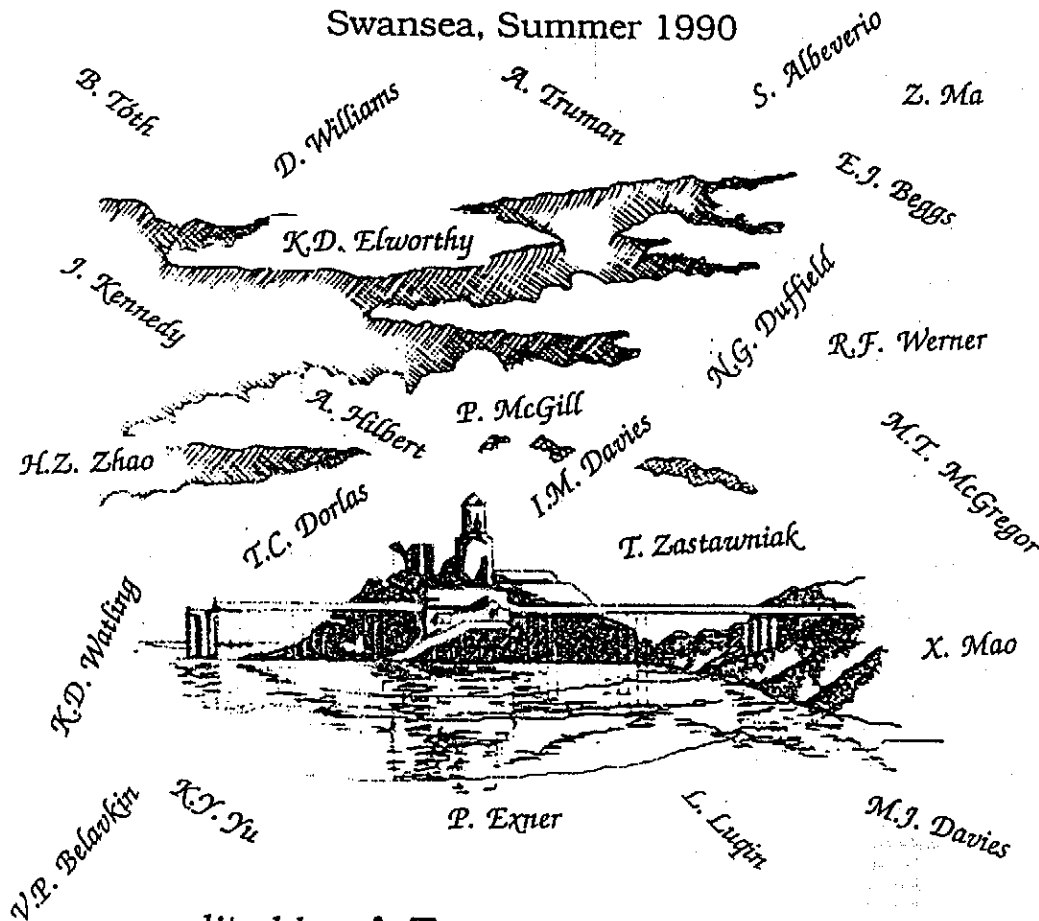
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# STOCHASTICS AND QUANTUM MECHANICS

Swansea, Summer 1990



edited by **A Truman & I M Davies**

World Scientific

## MATHEMATICS AS AN ECONOMIC RESOURCE

The working group "Mathematics In Research and Practice" at the Centre for Arts and Sciences North Rhine-Westphalia would like to introduce itself.

### Subject matter

Mathematics is an essential resource in our high-technology society. A great deal of scientific and technological success is based on mathematical theories and models. The increasing application of mathematics concerns not only the physical sciences and engineering, but also the natural and social sciences. Mathematics is in this regard a mutual and versatile language used to formulate and solve problems.

In the industrial sector, a growing trend towards the application of science and scientific methodology has become recognizable in recent years. This is demonstrated by, for instance, a rising need for transferring mathematical methods to specific applications in many technical and economic areas. Topics as varied as environmental and systems research, process control technology, computer-integrated production, and modelling "intelligent" processes with artificial intelligence or neural nets can be associated with mathematics. The common denominator of these new technologies is that they are all founded on the most modern mathematics. Ever more complex problems can be solved on modern computers by using information technology; however, the potential for the application of mathematics is often overshadowed by the computer sciences.

Application-oriented mathematical research far exceeds tackling routine problems. More importantly, it is faced with identifying and addressing new and interesting issues from real-life practice (be it in economy, science, or other areas). First, a mathematical model is created, and often a theory is formulated. From the theory, then, algorithms must be developed which allow efficient and practice-oriented implementation.

### Goals

In reality, the close relation between of theory and practice - including computer science and other fields of science and technology - often falls short of the ideal: considerable dialogue deficits not only among mathematical subdisciplines but also between mathematical research and its areas of application characterize the current situation. As such, the prospects of finding a place for mathematics in the dynamics of an industrial and information-oriented society do not seem hopeful. This is also reflected in the bad public image mathematics (and mathematicians!) have in society. This state of affairs means that there is often a lack of qualified young professionals, financial support is insufficient, and mathematics is being displaced by competition from the related disciplines.

An analysis of these deficits led the Centre for Arts and Sciences North Rhine-Westphalia to found the working group "Mathematics in Research and Practice." Specialists in various disciplines use this forum to exchange information, explore development and application options, initiate cooperation, and discuss the changes in mathematics as a science. Here, an interdisciplinary discussion takes place, one that includes science, economics, administration, institutes which promote research, and the media.

One of the working group's top priorities is to look into the conceptual difficulties of this dialogue and discuss proposals for its improvement in the future. In this respect, the working group's activities diverge from the usual in that the "metamathematical" issues mentioned above are also considered.

The working group "Mathematics in Research and Practice" operates on the border area between scientific knowledge and practical application. At the group's symposia, areas of application and their problems as well as

which tools are available are represented from the point of view of the "suppliers". On the other hand, "users" report on their "mathematical needs" and unsolved problems. In this way, matches can be made between those with a particular problem and those with a solution.

#### Activities and Results

At their first meeting (June 1990), the working group undertook an assessment of the situation in applied mathematics in the Federal Republic of Germany and discussed trends. It was decided that at subsequent meetings, in addition to setting interdisciplinary mathematical tasks, problems of research strategy would also be addressed.

At a symposium in October 1990, scientists and representatives from industry used examples to demonstrate the rôle of mathematics in their respective professional fields and discussed suggestions for improving communications between the fields of research and practice.

The following symposium in March 1991 was conducted on "Optimization" and "Control Theory"; the presentations covered a wide range of applications.

In October 1991, the working group held an information day, "Professional Mathematics - Academic and Career Opportunities", in which career counselors from all state employment offices in North Rhine-Westphalia and academic counselors from the colleges and universities took part. The press also attended.

In November 1991, the working group organized a symposium on "Mathematics in Environmental Research".

A symposium was held in March 1992 on "Pattern Recognition and Image Processing."

In cooperation with the Ministry of Economics of North Rhine-Westphalia, the working group took over the thematic organization of North Rhine-Westphalia's exhibition at the Hanover Trade Fair '92 (April 1 - 8, 1992) in the North Rhine-Westphalia pavilion, under the title "Formulas from North Rhine-Westphalia - Mathematics in Industrial Practice". The exhibition illustrated the importance of modern mathematics in practice (for small and medium-sized companies) by means of its manifold areas of application. The press was invited to this exhibition, as it was to several other of the working group's events. Numerous journalists accepted the invitation, and reported on the events on television, radio, and in magazines and newspapers. (The response of the press to the exhibition is documented in a press report, which can be obtained from the Centre for Arts and Sciences North Rhine-Westphalia.)

In the first two years of its existence, the working group "Mathematics in Research and Practice" has grown to over 350 members from all over Germany and elsewhere. Two symposia (among other events) are held annually on changing topics; the number of participants is limited to approx. 75. A symposium on "Mathematics in Medicine, Biology, and Agriculture" is planned for the 9th and 10th of November, 1992, at which the emphasis will be placed on statistical and stochastic methods. Here, the relevance of mathematical methods and their implementation by admissions/registration offices (such as the Federal Health Office) are to be discussed as well.

In the meantime, the "Duisburg Working Group for Mathematics in Research and Practice" has been formed, which pursues goals similar to those of the nation-wide group "Mathematics in Research and Practice" from the Centre for Arts and Sciences North Rhine-Westphalia. It is hoped that further regional activities will be initiated.

Head of the working group "Mathematics in Research and Practice": Dr. Simon Golln, M.Sc.  
Centre for Arts and Sciences North Rhine-Westphalia, Reichsstr. 45, D-4000 Düsseldorf 1, Federal Republic of Germany

Phone: + 49 / 2 11 / 37 05 81

Fax: + 49 / 2 11 / 37 05 86

#### EGYPTIAN MATHEMATICAL SOCIETY

333 ABDEL EL-KHALIK THARWAT ST.

CAIRO, EGYPT.

Tel.: 3925997.

#### ANNOUNCEMENT

Dear Sir

The first meeting to organize the Egyptian Mathematical Society "E.M.S." was held in Faculty of Science Ain Shams University on February 23, 1992.

The meeting elected the managing committee as follows:

1- Prof. A-S.F. Obada	President	(Quantum Mechanics)
2- Prof. M. Asaad	V. President	(Group Theory Algebra)
3- Prof. M. H. Fahmy	Secretary	(Ring Theory Algebra)
4-Dr. F. F. Ghaleb	Treasurer	(Applied Functional analysis & Computer Science)

Member of " ETMS " should hold Ph.D. degree in Mathematics, Theoretical Mechanics or Applied Maths.

Until now out of 470 Ph.D. staff members in Mathematics all over the Egyptian universities, more than 260 Professors have participated as members of the ETMS. The number might look small but in fact they supervise M.Sc and Ph.D students, besides they teach thousands at B.Sc levels

Definitely within a short time this number of members will include almost all the mathematicians in Egypt.

The aims of " ETMS " are:

(i) To create and strengthen the ties and connections among Egyptian Mathematicians and between the members of " ETMS " and other mathematical societies.

(ii) To help young mathematicians and mathematics users in their research.

(iii) Simplifying mathematics for nonspecialists.

The fulfilment of these aims will be satisfied through:

(1) Organizing seminars, colloquia, conferences and meetings on the local and international scales.

- (2) Publishing a periodical mathematical journal refereed by distinguished mathematicians all over the world.
- (3) Providing the research workers in mathematics by the most recent publications.
- (4) Simplifying and translating the fundamental and basic mathematical books and principals for nonspecialists in mathematics.
- (5) Exchanging membership & journals with other mathematical societies.
- (6) Editing a directory of Egyptian research workers in different mathematical fields.

ETMS will be happy if your association can offer information about:

- (1) Exchange of membership.
- (2) Providing ETMS with the publications of your association.
- (3) Helping in providing names of distinguished scientists who would willingly help in: a) Editorialsip to the math. journal of ETMS.  
b) Refreeing mathematical papers of the journal.
- (4) Computers, typing and photocopying equipments, are very well appreciated.
- (5) Funds for post-graduate students and researchers to accomplish their studies either in Egypt or abroad.

Please contact:

Prof. M. H. Fahmy  
Secretary to ETMS  
Math. Dept., Faculty of Science,  
Al-Azhar University, P.O.Box. 11884,  
Nasr City, Cairo, Egypt

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## MATHEMATICAL QUANTUM THEORY

A summer school in mathematical physics  
to be held at the  
University of British Columbia, Vancouver

- I. August 4-8, 1993      Field Theory and Many-Body Theory
- II. August 10-14, 1993    Schrödinger Operators

### Mini-course speakers

S. Agmon	J. Fröhlich	V. Rivasseau
D. Brydges	K. Gawędzki	I.M. Sigal
J. Feldman	W. Hunziker	B. Simon

### Organizing committee

J. Feldman, R. Froese, K. Gawędzki, B. Simon, L. Rosen

*This meeting is designed to be a research level summer school concentrating on two related areas of contemporary mathematical physics. Each session will feature a series of mini-courses of approximately four hours each. In addition, about thirty speakers have been invited to give one hour lectures. Short contributions will be accommodated as time permits.*

*For more information please contact: R. Froese, Department of Mathematics, University of British Columbia, Vancouver, B.C., Canada, V6T 1Z2  
email: rfroese@unixg.ubc.ca*

*A Canadian Mathematical Society annual seminar supported by the NSERC and the Centre de Recherches Mathématiques of the Université de Montréal.*

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## Summer School

### DYNAMICAL SYSTEMS AND NONLINEAR ANALYSIS -

Interdisciplinary Aspects

University of Cape Town

25 January - 5 February 1993

#### FORMAT

The Summer School provides a series of introductory courses to some of the major recent developments in the study of nonlinear dynamical systems, and in their impact on science and technology. Each course consists of approximately six lectures, and several seminars in which perspectives on recent developments will be given. There will also be time set aside for participants to deliver seminars on their work. Participants should have a background in ODE's or PDE's. The program below is still tentative.

#### SPEAKERS

Jeanne-Pierre Aubin Université de Paris-Dauphine  
Steven R Bishop University College, London  
P Collet École Polytechnique, Palaiseau, France  
J P Eckmann Université de Genève, Switzerland  
Celso Grebogi University of Maryland, College Park  
Jean Mawhin Louvain-la-Neuve, Belgium  
Jim Murray University of Oxford  
David Ruelle IHES, France  
R Temam Université de Paris-Sud, Orsay  
J Wisdom MIT

#### PROGRAM

##### Basic Lectures

1. P Collet: Introduction to Nonlinear Dynamics and Chaos
2. J P Eckmann: Dynamical Systems in Infinite Domains
3. J Mawhin: Critical Point Theory and Periodic or Homoclinic Solutions of Hamiltonian Systems
4. J-P Aubin: A Survey of Viability Theory  
Applications in Science and Engineering
5. R Temam: Attractors for Dissipative P D E's of Mechanics and Physics
6. C Grebogi: Bifurcation and Attractors in Chaotic Dynamics - an Illustrated Approach
7. S Bishop: Nonlinear Dynamics and Chaos in Physical Systems
8. J D Murray: Dynamical Systems in Mathematical Biology
9. J Wisdom: Hamiltonian Dynamics with Applications to the Dynamics of the Solar System

#### SEMINARS

1. P Collet: Ergodic Properties of Maps of the Interval
2. C Grebogi: Numerical Trajectories of Chaotic Systems
3. R Temam: Inertial Manifolds for Dissipative Dynamical Systems - Recent Developments
4. D Ruelle: To be announced

#### VENUE

The Summer School will be held in the university's Breakwater Centre. This is situated in the waterfront area, just a few minutes walk from a number of restaurants, cafes and theatres in a recently restored part of the city. The Centre houses lecture theatres, sleeping accommodation and a restaurant. Single or double rooms with private or shared bath are available. Prices range from R 86 to R 147 per room per night (\$ 30 to \$ 50) with meals about R 18 (\$ 6) each. There are also good hotels nearby. Cape Town in the summer time must rank as one of the world's most beautiful cities. There are extensive outdoor activities including beaches and mountain walks or climbs, and a fair amount of cultural activity in the evenings. The temperature at the time is warm to hot with little chance of rain.

#### ACTIVITIES

Optional organised activities will include a Symposium Dinner and three tours in the Cape Peninsula and surrounding winelands.

#### FEES

A registration fee of \$ 70 will be charged to cover costs.

#### CONTACTS

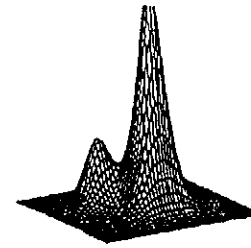
Prof Ronnie Becker  
Dr Erwin Brüning  
Department of Mathematics  
University of Cape Town  
Rondebosch 7700  
Tel: (021) 650 3203/3814/3192 FAX: (021) 650 3726  
Email: maths@ucthpx.uct.ac.za

The Summer School is under the auspices of the ANALYSIS RESEARCH GROUP and ACCS-Lab of the Department of Mathematics, UCT.



RESEARCH CENTRE FOR MATHEMATICAL AND PHYSICAL SCIENCES  
University of Chittagong, Chittagong, Bangladesh  
Telephone: P-A-B-X 210131-9, 210131-4—Ext.—330  
গণিত ও ভৌত বিজ্ঞান গবেষণা কেন্দ্র  
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**RCMPS**



NEEDS '93

9th Workshop on  
NONLINEAR EVOLUTION EQUATIONS  
AND DYNAMICAL SYSTEMS

Baia Verde, Gallipoli, Lecce (Italy)  
September 3-12, 1993

Hotel "LE SIRENUSE"

THIRD CHITTAGONG CONFERENCE ON  
MATHEMATICAL PHYSICS  
DECEMBER 29, 30, 31, 1992

\*\*\*\*\*

CONFERENCE ON CHEMICAL PHYSICS  
JANUARY 2, 3, 1993

The above two conferences will be held under the auspices of the Research Centre for Mathematical and Physical Sciences (RCMPS) University of Chittagong, with support from the International Centre for Theoretical Physics, Trieste, Italy. The first and second conferences on mathematical physics were held respectively during January 8-10, 1986 and December 17-19, 1988. As before, the theme of the Third Conference will be review and discussion of elementary particle physics and quantum field theory (including quantum gravity), general relativity and cosmology, solid state physics and statistical mechanics, nuclear physics and fields related to all these ones, as well as mathematical techniques relevant to or having potential relevance for these fields.

The lectures will be by invited speakers only, but there will be an open session for contributions from the floor. The lecturers will be requested to make their talks lucid and mainly of a review nature so that these are intelligible to a wide range of mathematicians and physicists. The lecturers may also include some work of their own for specialists in the audience.

The Conference on Chemical Physics will also be of similar pattern except that the topics covered will be those aspects of chemistry which are close to physics, such as physical chemistry. It is hoped to publish proceedings of both the conferences.

This is a preliminary announcement. Further details can be obtained from Professor Jamal N. Islam (RCMPS, University of Chittagong, Chittagong, Bangladesh), to whom all correspondence should be addressed.

(Please post and circulate)

The 9th Workshop on Nonlinear Evolution Equations and Dynamical Systems (NEEDS) will take place in Baia Verde (Gallipoli) near Lecce, Italy, from Friday September 3 (arrival day) to Sunday September 12 (departure day), 1993. The first eight Workshops of this series have taken place in Kolymbari near Chania (Crete) in 1980, 1983 and 1989, in Gallipoli near Lecce (Italy) in 1985 and 1991, in Balaruc-les-Bains near Montpellier (France) in 1987, and in Dubna near Moscow in 1990 and 1992. They have been reported in *Physica* **2D**, 545-548 (1981), **11D**, 389-391 (1984), **22D**, 431-436 (1988) and *Inverse Problems* **3**, 775-780 (1987), **5**, 667-670 (1989) and **7**, 167-173 (1991). Proceedings of the 1987, 1989, 1990 and 1991 Workshops have also been published: "Nonlinear Evolutions", ed. J.P. Léon (World Scientific), "Nonlinear Evolution Equations and Dynamical Systems", eds. S. Carillo and O. Ragnisco (Springer-Verlag), "Nonlinear Evolution Equations and Dynamical Systems (NEEDS '90)", eds. V.G. Makhankov and O.K. Pashaev (Springer-Verlag) and "Nonlinear Evolution Equations and Dynamical Systems (NEEDS '91)", eds. M. Boiti, L. Martina and F. Pempinelli (World Scientific); 1992 Proceedings: "Nonlinear Evolution Equations and Dynamical Systems (NEEDS '92)", eds. W. Makhankov, O. Pashaev and I. Puzynin, will be published by World Scientific.

The 9th Workshop will follow the same pattern, both in terms of scientific content and organizational structure. Hence it will be interdisciplinary in character; the topics covered will include integrable dynamical systems (nonlinear ODEs and PDEs), near integrable and non integrable model equations, applications in classical and quantum physics (elementary particles, solids, statistical mechanics, fluids, plasmas, etc.) and elsewhere (oceanography, biophysics, etc.). The techniques discussed will range from pure mathematics through numerical computations to applicable theory and experiments.

An all inclusive fee of Italian Lire 950,000 (1 US\$ is about Lire 1,200) will cover the cost of registration (Italian Lire 140,000), meals and lodging during the Workshop (in double occupancy rooms with private facilities) and the transportation from Lecce terminal or Brindisi International Airport to Gallipoli and back (which will be provided by the Organizing Committee for participants arriving on September 3 and leaving on September 12). The all inclusive rate for accompanying persons is Italian Lire 810,000.

The Workshop is open to qualified scientists who have contributed to the topics mentioned above. Persons interested in participating should apply as soon as possible (acceptances will be on a first-come first-serve basis), and in any case before May 10, 1993, by contacting M.C. Gerardi (Conference Secretary), Dipartimento di Fisica, Università di Lecce, via Arnesano, 73100 Lecce, Italy - tel. +39 832/620467 and E-Mail: GERARDI@LECCE.INFN.IT; telex 860128 UNSTLE; fax +39 832 620505.

Messages sent by E-mail, if not confirmed in few days, should be sent again using Telex, fax or ordinary mail.

Participants will be notified about their admittance by May 31, 1993 at the latest (please include in the application form: fax, telex, phone or E-Mail). They will then be provided with further information, and asked to confirm their participation by depositing a non-refundable advance of Italian Lire 140,000 (or US\$ 120). The balance of the participation fee will be paid upon arrival.

F. CALOGERO

M. BOITI  
L. MARTINA  
F. PEMPINELLI  
G. SOLIANI



# NEEDS '93 Registration Form

NAME ..... First name..... Sex .....

Affiliation .....

Mailing Address .....

Tel. nr. .... Telex .....

Fax nr. ....

E-Mail Address ..... Network .....

Date of arrival: **Friday 3rd September, 1993**

Date of departure: **Sunday 12th September, 1993**

- Expected date (and means) of arrival: .....
- Expected date (and means) of departure .....
- Accompanying person(s), full name:
  - 1) ..... 2) .....
  - 3) ..... 4) .....

Discount available for children who share rooms with their parents:

From 0 to 4:	50%
From 4 to 10:	20%
From 10 to 16:	10%

- Special requests concerning accommodation .....

In case you prefer to share your room with a certain participant, please indicate the name: .....

The all inclusive fee (food and accommodation in double occupancy room) for participants (see poster for details) is Italian L. 950.000. The all inclusive rate for accompanying persons is L. 810.000. Few single rooms will be available at an extra cost of L. 117.000.

I would like to present: LECTURE [ ] POSTER [ ]

Enclose title and one-page abstract, suitable for direct reproduction, for any lecture or poster you intend to present.

REMARK (if any) .....

Please enclose a one-page (suitable for direct reproduction) biographical presentation, to be distributed to workshop participants; it should include (at least) the following data:

- Name (clearly marked on top), professional affiliation, complete addresses, scientific interests (past and present), titles of recent published papers and/or preprints, other interests (scientific or otherwise).

Date: .....

Signature: .....

This form should be sent to:

Ms. MARIA CONCETTA GERARDI  
(NEEDS '93)  
Dipartimento di Fisica  
Universita' di Lecce  
Via Arnesano, 73100 LECCE, Italy

E-Mail: GERARDI@LECCE.INFN.IT  
Telex: 860128 UNSTLE  
Fax: +39 832 620505  
Tel.: +39 832 620467

Bank account: BANCO DI ROMA  
Via Roma - GALLIPOLI (Lecce), Italy  
Acc. nr. 981 (NEEDS)

**IMPORTANT:**

- We cannot accept credit card payments for the registration fee and accommodation expenses; however, credit card payments will be accepted by the Hotel for extra expenses (if any).
- Please note the new e-mail address

# OF MATHEMATICAL PHYSICS

Published by Wiley-Nauka Scientific Publishers, Moscow

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## AIMS & SCOPE

The Russian Journal of Mathematical Physics publishes short communications on recent advances, original papers with complete proofs, reviews on the topics of modern mathematical physics, which is at present the foundation of mathematical models of modern natural science and which amalgamates a vast number of mathematical disciplines that were developing independently in the past.

Among these disciplines are the following: functional analysis, theory of linear and nonlinear partial differential equations, theory of random processes, asymptotic methods, modern differential and algebraic geometry and topology, dynamical systems, calculus of variations, representations of Lie groups and algebras. We will also publish conjectures, heuristic considerations, and papers written on the physical level of accuracy; the latter can be considered by the readers as conjectures. Due to the cardinal changes in world politics and the conversion of military industry we will be able to publish papers which previously would have been contained in secret reports.

The publication of our Journal (rapid, in English, in accordance with Western standards of typesetting) will help inform the international mathematical community on the most recent results not only of Russian mathematicians of world renown, but also of young talented researchers.

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Preprint No. SFB 288 No.12  
*A Hilbert-Schmidt Property of Resolvent Differences of Singularly Perturbed Generalized Schrödinger Operators*
- M. Demuth<sup>1</sup>, F. Jeske<sup>2</sup> and W. Kirsch<sup>2</sup>, <sup>1</sup>Max-Planck-Research-Group, Department of Mathematics, University of Potsdam, Am Neuen Palais 10, 0-1571 Potsdam, Germany. <sup>2</sup> Fakultät für Mathematik, Ruhr-Universität, D-4630 Bochum 1 (Germany).  
Preprint No: MPI/92-29  
*On the Rate of Convergence for Large Coupling Limits in Quantum Mechanics*
- B.P. Dolan, Department of Mathematical Physics\*, St. Patrick's College, Maynooth, Ireland and School of Theoretical Physics, Dublin Institute for Advanced Studies, 10 Burlington Road, Dublin 4, Ireland. \* email: bdolan@maths.may.ie  
Preprint No: DIAS-STP-92-19  
*Quantum Non-Demolition of the Universe*
- V. Enss, Institut für Reine und Angewandte Mathematik, RWTH Aachen, Templergraben 55, D-5100 Aachen, Germany.  
email: iw010en@dacth11.Bitnet  
*Quantum Scattering with Long-Range Magnetic Fields*
- A.C.D. van Enter<sup>\*1</sup>, R. Fernández<sup>2</sup> and A.D. Sokal<sup>3, 1</sup> Institute for Theoretical Physics, P.O. Box 800, University of Groningen, Groningen, The Netherlands. <sup>2</sup> Institut de Physique Théorique, EPFL, PHB-Ecublens, CH-1015 Lausanne, Switzerland. <sup>3</sup> Department of Physics, New York University, 4 Washington Place, New York, NY 10003, USA. \* Speaker at the Conference.  
*Non-Gibbsian States for Renormalization-group Transformations and Beyond*
- A.C.D. van Enter<sup>1</sup>, A. Hof<sup>2</sup> and J. Miekisz<sup>3, 1</sup> Institute for Theoretical Physics, P.O. Box 800, University of Groningen, Groningen, The Netherlands. <sup>2</sup> Dept. Mathematik, ETH-Zentrum, 8092 Zürich, Switzerland. <sup>3</sup> Institut de Physique Théorique, Université Catholique de Louvain, B-1348 Louvain-la-Neuve, Belgium.  
*Overlap Distributions for Deterministic Systems with Many Pure States*
- M. Fannes<sup>1,2</sup>, B. Nachtergaele<sup>3</sup> and R.F. Werner<sup>4, 1</sup> Inst.Theor.Fysica, Universiteit Leuven, B-3001 Leuven, Belgium - email: fgbd20@blekul11.bitnet. <sup>2</sup> Bevoegdverklaard Navorsers, N.F.W.O. Belgium. <sup>3</sup> Department of Physics, Princeton University, NJ-08544-708, U.S.A. email: bxn@math.princeton.edu - on leave from Universiteit Leuven, B-3001 Leuven, Belgium. <sup>4</sup> Fachbereich Physik, Universität Osnabrück, Pf. 4469, Osnabrück, Germany - email: reinwer@dosun11.bitnet.  
Preprint No: KUL-TF-92/23  
*Abundance of Translation Invariant Pure States on Quantum Spin Chains*
- H-O. Georgii, Mathematisches Institut der Universität München, Theresienstr. 39, D-8000 München 2, Germany.  
*Large Deviations for Hard-Core Particle Systems\**  
\* Work supported by the Deutsche Forschungsgemeinschaft
- J-L. Gervais<sup>1</sup> and M.V. Saveliev<sup>2†</sup>, <sup>1</sup> Laboratoire de Physique Théorique de l'École Normale Supérieure\*, 24 rue Lhomond, 75231 Paris Cédex 05, France. <sup>2</sup> Laboratoire de Physique Théorique de l'ENS Lyon, 46 Allée d'Italie, 69364 Lyon Cédex 07, France.  
\* Unité Propre du Centre National de la Recherche Scientifique, associée à l'École Normale Supérieure et à l'Université de Paris-Sud.  
† On leave of absence from the Institute for High Energy Physics, 142284, Protvino, Moscow region, Russia.  
Preprint No: LPTENS-92/07, ENSLAPP-L-370/92  
*Black Holes from Non-Abelian Toda Theories†*  
‡ L<sup>A</sup>T<sub>E</sub>X file available from hep-th@xxx.lanl.gov (#9203039)

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F. Gesztesy<sup>1</sup>, G.M. Graf<sup>2</sup> and B. Simon<sup>2</sup>. <sup>1</sup> Department of Mathematics, University of Missouri, Columbia, MO 65211, USA. <sup>2</sup> Division of Physics, Mathematics and Astronomy, California Institute of Technology, 253-37 Pasadena, CA 91125, USA - Research partially funded under NSF grant number DMS-9101716.

*The Ground State Energy of Schrödinger Operators*  
To appear in Communications in Mathematical Physics.

S. Giller<sup>1\*</sup>, P. Kosinski<sup>1\*</sup>, M. Majewski<sup>1\*</sup>, P. Masińska<sup>2\*</sup> and J. Kunz<sup>3</sup>.

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Preprint No: KFT UL 2/92

*More About Q-Deformed Poincare Algebra*

J. Ginibre<sup>1</sup>, A. Soffer<sup>2</sup> and G. Velo<sup>3</sup>. <sup>1</sup> Laboratoire de Physique Théorique et Hautes Energies\*, Bât. 211, Université de Paris Sud, 91405 Orsay, France. <sup>2</sup> Department of Mathematics, Princeton University, Princeton, NJ 08544, U.S.A. <sup>3</sup> Dipartimento Di Fisica, Università di Bologna and INFN, Sezione di Bologna, Italy.

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Preprint No: LPTHE 91/58

*The Global Cauchy Problem for the Critical Non Linear Wave Equation*

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Preprint No: LPTHE 92/06

*Regularity of Solutions of Critical and Subcritical Non Linear Wave Equations*

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G.M. Graf and B. Simon, Division of Physics, Mathematics and Astronomy, California Institute of Technology, 253-37 Pasadena, CA 91125, U.S.A.

*Asymptotic Series for the Ground State Energy of Schrödinger Operators\**

To appear in the Journal of Functional Analysis

\* Research supported under NSF grant number DMS-9101716

H. Grosse, Institut für Theoretische Physik, Universität Wien, Preprint No: UWThPh-1992-18  
*Symmetry and Symmetry Breaking in Statistical Physics*

H. Grosse<sup>1</sup>, W. Kummer<sup>2</sup>, P. Presnajder<sup>3</sup> and D.J. Schwarz<sup>2\*</sup>. <sup>1</sup> Institut für Theoretische Physik, Universität Wien, Boltzmannngasse 5, A-1090 Wien, Austria. <sup>2</sup> Institut für Theoretische Physik, Technische Universität Wien, Wiedner Hauptstrasse 8-10, A-1040 Wien, Austria. <sup>3</sup> Matematicko-fyzikálna fakulta, Univerzita Komenského, Mlynská dolina F 2, CS-842 15 Bratislava, Czechoslovakia.

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Preprint No: TUW-92-04, UWThPh-1992-17

*Novel Symmetry of Non-Einsteinian Gravity in Two Dimensions*

H. Grosse<sup>1</sup> and E. Langmann<sup>2\*</sup>. <sup>1</sup> Institut für Theoretische Physik, Universität Wien. <sup>2</sup> Institut für Theoretische Physik, Technische Universität Graz, Austria. \* Present address: Department of Physics, University of British Columbia, Vancouver, Canada.

Preprint No: UWThPh-1991-54.

*The Geometric Phase and the Schwinger Term in Some Models*

H. Grosse<sup>1</sup> and J. Madore<sup>2</sup>. <sup>1</sup> Institut für Theoretische Physik, Boltzmannngasse 5, A-1090 Wien. <sup>2</sup> Laboratoire de Physique Théorique et Hautes Energies\*, Université de Paris-Sud, Bât. 211, F-91405 Orsay. \* Laboratoire associé au CNRS.

Preprint No: LPTHE Orsay 92/12, UWThPh-1992-07.

*A Noncommutative Version of the Schwinger Model*

A.S. Holevo, Steklov Mathematical Institute, Vavilova 42, 117966 Moscow, Russia.

Preprint No: IFUM 424/FT

*A Note on Covariant Dynamical Semigroups*

A.S. Holevo, Steklov Mathematical Institute, Vavilova 42, 117966 Moscow, Russia. Preprint No: IFUM 425/FT

*Conservativity of Covariant Dynamical Semigroups*

L.P. Horwitz, Institut des Hautes Etudes Scientifiques, 35 rue de Chartres, 91440 Bures-sur-Yvette, France. Preprint No: IHES/P/91/94

*Dynamical Group of the Relativistic Kepler Problem*

L.P. Horwitz\*, Institut des Hautes Etudes Scientifiques, 91440 Bures-sur-Yvette, France. \*On sabbatical leave from School of Physics and Astronomy, Raymond and Beverly Sackler Faculty of Exact Sciences, Tel Aviv University, Ramat Aviv, Israel.

Preprint No: TAUP 1965-92

*On the Definition and Evolution of States in Relativistic Classical and Quantum Mechanics*

- L.P. Horwitz<sup>1†</sup> and W.C. Schieve<sup>2§</sup>. <sup>1</sup> School of Natural Sciences, Institute for Advanced Study, Princeton, NJ 08540 and Ilya Prigogine Center for Studies in Statistical Mechanics and Complex Systems, The University of Texas at Austin, Austin, TX 78712. <sup>2</sup> Ilya Prigogine Center for Studies in Statistical Mechanics and Complex Systems, The University of Texas at Austin, Austin, TX 78712. \*On sabbatical leave from School of Physics and Astronomy, Raymond and Beverly Sackler Faculty of Exact Sciences, Tel Aviv University, Ramat Aviv, Israel. † Work supported in part by a fellowship from the Ambrose Monell Foundation (at IAS) and a research grant from the Ilya Prigogine Center for Studies in Statistical Mechanics and Complex Systems. § W.C.S. would like to acknowledge a Senior Scientist Summer Award from the Alexander von Humboldt Society at the Max-Planck Institut für Quantenoptik, D-8046, Garching, Germany, where this work was completed. Preprint No: TAUP 1959-92, Revised March 1992, IASSNS-HEP-91/30 *Horseshoes in a Relativistic Hamiltonian System in 1+1 Dimensions*
- P.E.T. Jørgensen<sup>1\*</sup>, L.M. Schmitt<sup>2</sup> and R.F. Werner<sup>3</sup>. <sup>1</sup> Department of Mathematics, University of Iowa, Iowa City, IA 52242, U.S.A. <sup>2</sup> FB Mathematik/Informatik, Universität Osnabrück, Postfach 4469, D-4500 Osnabrück, Germany. <sup>3</sup> FB Physik, Universität Osnabrück, Postfach 4469, D-4500 Osnabrück, Germany. \* Supported in part by the NSF(USA), and NATO. *q-Canonical Commutation Relations and Stability of the Cuntz Algebra*
- G. Kaiser, Department of Mathematics, University of Massachusetts at Lowell, Lowell, MA 01854, USA., email: kaiserg@woods.ulowell.edu Technical Reports Series #27. *Wavelet Electrodynamics*
- J. Kupsch, Fachbereich Physik, Universität Kaiserslautern, D-6750 Kaiserslautern, Germany. Preprint No.KL-TH-92/3 *Fermionic and Supersymmetric Stochastic Processes*
- J. Kupsch, Fachbereich Physik, Universität Kaiserslautern, D-6750 Kaiserslautern, Germany. Preprint No.KL-TH-92/8 *Non-Commutative Integration and Euclidean Quantum Fields for Fermions*
- M. Lavelle<sup>1\*</sup> and D. McMullan<sup>2†</sup>. <sup>1</sup> Institut für Physik, Johannes Gutenberg-Universität, Staudingerweg 7, Postfach 3980, W-6500 Mainz, F.R. Germany. <sup>2</sup> Dublin Institute for Advanced Studies, School of Theoretical Physics, 10 Burlington Road, Dublin 4, Ireland.

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 Preprint No: MZ-TH/92-29, DIAS-STP-92-13  
*The Radiation Class: A New Set of Temporal Gauges*

- H. Leblond and M. Manna, Laboratoire de Physique Mathématique\*, Université Montpellier II, 34095 Montpellier Cedex 5, France.  
 \* Unité de Recherche Associée au CNRS n°768  
 Preprint No: PM/92-04  
*Nonlinear Modulation of Electromagnetic Waves in a Ferromagnet*
- J. Leon, Département de Physique Mathématique, Université Montpellier II, 34095 Montpellier, France.  
 Preprint No: PM 92/20  
*Interaction of Radiation with Matter: Integrable Problems*
- E.H. Lieb<sup>1,2\*</sup>, J.P. Solovej<sup>2†</sup> and J. Yngvason<sup>3§</sup>. <sup>1</sup> Department of Physics, Jadwin Hall, Princeton University, P.O. Box 708, Princeton, NJ 08544. <sup>2</sup> Department of Mathematics, Fine Hall, Princeton University, Princeton, NJ 08544. <sup>3</sup> Science Institute, University of Iceland, Dunhaga 3, IS-107 Reykjavik, Iceland.  
 \* Work partially supported by U.S. N.S.F. Grant PHY90-19433 A01  
 † Work partially supported by U.S. N.S.F. Grant DMS 92-03829  
 § Work partially supported by the Hereus-Stiftung and the Research Fund of the University of Iceland.  
*Asymptotics of Heavy Atoms in High Magnetic Fields:*  
 1. *Lowest Landau Band Regions*
- G. Lindblad\*, Department of Theoretical Physics, Royal Institute of Technology, S-100 44 Stockholm, Sweden.  
 \* email: gli@theophys.kth.se  
*Determinism and Randomness in Quantum Dynamics*
- G. Lindblad\*, Department of Theoretical Physics, Royal Institute of Technology, S-100 44 Stockholm, Sweden.  
 \* email: gli@theophys.kth.se  
*Fokker-Planck Equations for Eigenstate Distributions*
- Z.-Q. Ma<sup>1</sup> and D.H. Tchrakian<sup>2,3\*</sup>. <sup>1</sup> Institute of High Energy Physics, Academia Sinica, P.O. Box 918 (4), Beijing 3100039, P.R. China. <sup>2</sup> Centre de Physique Théorique, Ecole Polytechnique, 91128 Palaiseau, France. <sup>3</sup> School of Theoretical Physics, Dublin Institute for Advanced Studies, 10 Burlington Road, Dublin 4, Ireland. \*On leave from the Department of Mathematical Physics, St. Patrick's College, Maynooth, Ireland.  
 Preprint No: DIAS-STP-92-22  
*Wu-Yang Fields*

- V.B. Priezzhev\*, Dublin Institute for Advanced Studies, 10 Burlington Road, DUBLIN 4, Ireland. \* Permanent Address: Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna 141980, Russia.  
Preprint No: DIAS-STP-92-10  
*Exact Height Probabilities in the Abelian Sandpile Model*
- J.V. Pulé<sup>1\*</sup> and V.A. Zagrebnov<sup>2†</sup>. <sup>1</sup> Department of Mathematical Physics, University College Dublin, Belfield, Dublin 4, Ireland. <sup>2</sup> Instituut voor Theoretische Fysica, Katholieke Universiteit Leuven, Celestijnenlaan 200D, B-3001 Leuven, Belgium.  
\* Research Associate, School of Theoretical Physics, Dublin Institute for Advanced Studies. † On leave of absence from the Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna 141980, CIS - Russia.  
Preprint No: DIAS-STP-92-20  
*A Pair Hamiltonian Model of a Non-Ideal Boson Gas*
- A. Razon and L.P. Horwitz, School of Physics and Astronomy, Raymond and Beverly Sackler Faculty of Exact Sciences, Tel Aviv University, Ramat Aviv, Israel.  
Preprint No: TAUP 1824-90  
*Uniqueness of the Scalar Product in the Tensor Product of Quaternion Hilbert Modules*
- J. Rembielinski, University of Lodz, Department of Theoretical Physics, ul. Pomorska 149/153, 90-236 Lodz, Poland.  
Preprint No: KFT UL 1/92  
*Quantum Inhomogenous Groups Related to the Manin's Plane*
- A. Rogers, Department of Mathematics, King's College, Strand, London, WC2R 2LS. email: F.A.Rogers@UK.AC.KCL.CC.OAK  
Preprint No: KCL-TH-92-3  
*Stochastic Calculus in Superspace II: differential forms, supermanifolds and the Atiyah Singer index theorem\**  
\* Research supported by the Royal Society
- P. Ruelle<sup>1</sup> and S. Sen<sup>2,1</sup>, <sup>1</sup> Dublin Institute for Advanced Studies, 10 Burlington Road, Dublin 4, Ireland. <sup>2</sup> School of Mathematics, Trinity College Dublin, 18 Westland Row, Dublin 2, Ireland.  
Preprint No: DIAS-STP-92-17  
*Toppling Distributions in One-dimensional Abelian Sandpiles*
- B. Simon\*, Division of Physics, Mathematics and Astronomy, 253-37, California Institute of Technology, Pasadena, CA 91125. \* Research partially supported by USNSF under grant number DMS-9101715  
*Large Time Behaviour of the Heat Kernel: On a Theorem of Chavel and Karp*  
To appear in the Proceedings of the American Mathematical Society
- B. Simon\*, Division of Physics, Mathematics and Astronomy, 253-37, California Institute of Technology, Pasadena, CA 91125. \* Research partially supported by USNSF under grant number DMS-8801918  
*The Weyl Transform and  $L^p$  Functions on Phase Space*  
To appear in the Proceedings of the American Mathematical Society
- O. Steinmann, Fakultät für Physik, Universität Bielefeld, D-4800 Bielefeld 1, Germany. Preprint No: BI-TP 92/28  
*Perturbation Theory of Wightman Functions*
- I. Tsutsui<sup>1</sup> and L. Fehér<sup>2\*</sup>. <sup>1</sup> Dublin Institute for Advanced Studies, 10 Burlington Road, Dublin 4, Ireland. <sup>2</sup> Laboratoire de Physique Nucléaire, Université de Montréal, Montréal, Canada H3C 3J7. \* On leave from Bolyai Institute of Szeged University, H-6720 Szeged, Hungary.  
Preprint No: DIAS-STP-92-09, UdeM-LPN-TH-92/92  
*On the Lagrangian Realization of the WZNW Reductions*
- S. Twareque Ali<sup>1\*</sup>, J.-P. Antoine<sup>2</sup> and J.-P. Gazeau<sup>3,1</sup>. <sup>1</sup> Department of Mathematics and Statistics, Concordia University Montréal, Québec, Canada H4B 1R6. <sup>2</sup> Institut de Physique Théorique, Université Catholique de Louvain, B-1348 Louvain-la-Neuve, Belgium. <sup>3</sup> Laboratoire de Physique Théorique et Mathématique, Université Paris 7, 2 place Jussieu, F-75251 Paris Cedex 05, France. \* Work supported in part by the Natural Science & Engineering Research Council (NSERC) of Canada. Preprint No: UCL-IPT-91-25  
*Relativistic Quantum Frames*
- A. Verbeure and V.A. Zagrebnov<sup>†</sup>. Instituut voor Theoretische Fysica, Katholieke Universiteit Leuven, Celestijnenlaan 200 D, B-3001 Leuven, Belgium. † On leave of absence from Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna 141980, CIS (Russia). Preprint No: KUL-TF-92/25  
*About the Luttinger Model\**  
\* Dedicated to Professor F. Cerulus on the occasion of his 65th birthday
- M. Znojil, Department of Theoretical Nuclear Physics, UJF CSAV, 250 68 Rez, CSFR. Preprint No: KL-TH-92/9  
*What is Next to Harmonic Oscillator?*

## Job Openings in Mathematical Physics

As a service to the IAMP membership, we hope to run a column on job openings in Mathematical Physics in future issues of the Bulletin. Given the timing of the announcements of job openings, the Autumn issue of the Bulletin would be the issue which would normally carry most of these, although there are relatively few in this first year of offering this service.

Please let us have copies of job advertisements so we can include these in future issues.

*Arthur Jaffe*  
*President*

## POSITION IN MATHEMATICAL PHYSICS

A position as post-doctoral fellow in mathematical physics at an annual salary of approximately \$28,000 will be available at Harvard University starting September 1, 1993. The position is for one year with the possibility of reappointment. Special fields of interest include field theory, non-commutative geometry, or related statistical mechanics problems. Applicants for this position should write to Arthur Jaffe at the above address, and also have two recommendations sent to him before December 15, 1992.