力学系通信　No.15

編集：京都大学理学部数学教室　国府寛司

皆様すでに御存じと思いますが，池上宜弘先生が去る８月２９日に御亡くなりになりました．謹んで御冥福を御祈りします．

池上先生が中心になってやってこられたこの「力学系通信」を今後とも継続して行きたいということで今回は私が編集をさせていただきました．次回は富山医科薬科大学の笹野さんがやっていただけることになっていますので原稿や情報を御寄せください．

連絡先：〒930-01　富山市杉谷2630　富山医科薬科大学　笹野一洋様

１．　近況

早川英治郎氏：富山大学教養部へ就任　１０月１日より

国府寛司：外国出張（1992.2.1—1992.8.31, Limburgs Universitair Centrum, Belgium;
1992.9.1—1992.11.31, Georgia Institute of Technology, USA)

２．　国内シンポジウム

数理研短期共同研究「低次元力学系の研究」
1991年5月13日—5月17日　京大数理解析研
世話人：国府寛司（京大理）

第３回日ソ位相数学シンポジウム
1991年6月10日—6月17日　新潟大学
世話人：青木統夫（東京都立大理）他

山中湖力学系研究集会
1991年7月3日—7月7日　日本大学山中湖セミナーハウス
世話人：故池上宜弘（日大文理）

力学系セミナーin北海道
1991年10月6日—10月8日　グリーンハイツ鶴居
世話人：三波篤郎（北大理）

非線形可積分系の現状と展望
1991年10月31日—11月2日　京大会館
世話人：上野喜三雄（早稲田大理工）他

数理研短期共同研究「正則ベクトル場の大域的性質の研究」
1991年11月25日—11月28日　京大数理解析研
世話人：伊藤敏和（龍谷大経済）

力学系カオスセミナー
1991年12月25日—12月27日　東京都立大学
世話人：青木統夫，斉藤暁（東京都立大理）

数理研研究集会「力学系の構造と分岐」（予定）
1992年2月18日—2月21日　京大数理解析研
世話人：宇敷重広（京大人間環境学研究科）
1次元力学系研究集会ーリノーマライゼーションを中心としてー（予定）
1992年5月19日—5月24日　中津川研修センター
世話人：笹野一洋（富山医科薬科大学）

3．　国外シンポジウム

4th Czecho-Slovak Summer School on Dynamical Systems, Bratislava, June 24-29, 1991
(Organizer: Pavol Brunovsky)
EquaDiff '91, International Conference on Differential Equations, Barcelona, August 26-31, 1991
(Organizer: C.Perelló, C.Simó, J.Solà-Morales)
School on Dynamical Systems, Trieste, September 9-27, 1991
(Organizer: J. Palis, Jr. & Ya. Sinai)
Complex Analytic Method in Dynamical Systems, IMPA, Brasil, January 22-30, 1992
(Organizer: C. Camacho, A. Lins-Neto & P. Sad)
School on Dyanmical Systems, Trieste, Italy, May 25 - June 5, 1992 （予定）
Workshop on Dyanmical Systems, Trieste, Italy, June 8-19, 1992 （予定）
(Organizer:J. Palis, Jr. & Ya. Sinai)
International Conference on Bifurcations in Differentiable Dynamics, Diepenbeek, Belgium,
June 9-13, 1992 （予定）
(Organizer: F. Dumortier, A. Vanderbauwhede & I. Stewart)
International Workshop on Dynamical Systems, Porto, Portugal, August 3-8, 1992 （予定）
(Organizer: M. Calvalho, M. A. Chaves, M. Pollicott, J. Rocha & M. Viana)

4．　外国人の来日

K. Mischaikow (Georgia Institute of Technology, Atlanta): 1991.3.5-1991.3.30
R. V. Plykin : 1991.6
S. Angenent(Univ. Wisconsin, Madison): 1991.10.1-1992.1.2
E. Zehnder (ETH, Zurich): 1991.11.20-1991.12.15
McMullen: (予定 - 宍倉さんにおたずねください)

5．　プレプリント

白岩謙一先生より
[J. Palis & J.-C. Yoccoz], Homoclinic tangencies for hyperbolic sets of large Hausdorff dimension.

Equadiff '91 の Preprint List

木坂　正史（京大理数学）

1. P. Brunovský, P. Poláčik and B. Sandstede, *Convergence in general parabolic equations in one space dimension.*
2. B.Sandstede and B.Fiedler, *Dynamics of periodically forced parabolic equations on the circle.*
3. M.Dellnitz, M.Golubitsky and I.Melbourne, *The Structure of Symmetric Attractors.*
4. M.Dellnitz, M.Golubitsky and I.Melbourne, *Mechanisms of Symmetry Creation.*
5. F.Battelli, *Bifurcation from heteroclinic orbits to semi-hyperbolic equilibria.*
6. A.J. Rodríguez-Luis, E. Freire and E. Gamero, *On a Three-Parameter Unfolding of a Degenerated Takens-Bogdanov Bifurcation.*
7. E. Gamero, E. Freire, A.J. Rodríguez-Luis and E. Ponce, *Multiparameter Bifurcations in an Autonomous Electronic Oscillator.*
8. A.J. Rodríguez-Luis, E. Freire and E. Ponce, *A method for homoclinic and heteroclinic continuation in two and three dimensions.*
9. A.J. Rodríguez-Luis, E. Freire and E. Ponce, *On a codimension 3 bifurcation arising in an autonomous electronic circuit.*

二宮　広和（京大理数学）

1. P. Freitas and C. Rocha, *Bogdanov singularity in the Fitzhugh-Nagumo equations.*
2. C. Rocha, *Some remarks on the singular problem for the scalar parabolic equation with variable diffusion.*

森田　善久（龍谷大理工数理情報）

1. A. Rodoriguez-Bernal, *On the construction of inertial manifolds under symmetry constraints I : abstract results.*
2. A. Rodoriguez-Bernal, *On the construction of inertial manifolds under symmetry constraints II : $O(2)$ constraint and inertial manifold on thin domain.*

国府寛司・岡宏枝所有のもの

[H. Annabi, M. L. Annabi, & Freddy Dumortier], Continuous dependence on parameters in the Bogdanov-Takens bifurcation.

[Michael Benedicks & Lai-Sang Young], Absolutely continuous invariant measures and random perturbations for certain one-dimensional maps.

[Bo Deng], Symbolic dynamics for chaotic systems.

[Freddy Dumortier & Robert Roussarie], On the saddle-loop bifurcation.

[Freddy Dumortier], Local study of planar vector fields: Singularities and their unfoldings.

[Josef Hofbauer, John Mallet-Paret, & H. L. Smith], Stable periodic solutions for the hypercycle system.

[Masashi Kisaka, Hiroshi Kokubu & Hiroe Oka], Supplement to homoclinic doubling bifurcations in vector fields.

[Hiroshi Kokubu], A construction of three dimensional vector fields which have a codimension two heteroclinic loop at Glendinning-Sparrow T-point.

[Minkyu Kwak], Finite dimensional inertial forms for the 2D Navier-Stokes equations.

[Hiroe Oka], Singular perturbations of autonomous ordinary differential equations and heteroclinic bifurcations.

[Peter Polacik & Ignac Terescak], Convergence to cycles as a typical asymptotic behavior in smooth strongly monotone discrete-time dynamical systems.

[Peter Polacik], Realization of any finite jet in a scalar semilinear parabolic equation on the ball in R3.

[Peter Polacik], Imbedding of any vector field in a scalar semilinear parabolic equation.

[Clerk Robinson], Homoclinic bifurcation to a transitive attractor of Lorenz type, II.

[Jan A. Sanders], On the computation of normal forms.

[Jan A. Sanders & J.-C. van der Meer], Unique normal form of the Hamiltonian 1:2-resonance.

[Jianhua Sun], On the three-dimensional homoclinic systems (I): A criterion for weak homoclinic attractor.

[Jianhua Sun], On the three-dimensional homoclinic systems (II): Bifurcation and chaotic dynamics.

[Lai-Sang Young], Ergodic theory of chaotic dynamical systems.

[Lai-Sang Young], Decay of corrections for certain quadratic maps.

6. 寄稿

ICTP（トリエステ）での夏の学校

京大（理）　辻井正人

ウィーンから夜行列車にゆられて約8時間。夜が明けると畑の中に、ポツリ、ポツリと古ぼけた農家が並ぶイタリアの農村風景が広がる。さらになだらかな丘陵地帯をぬけ、アドリア海が見え始めると、まもなく列車はトリエステという町に着く。ユーゴに程近いこの町は、案内書によれば、オーストリア領になったり、ユーゴになったり、複雑な歴史を経て、第二次世界大戦後にイタリア領になったらしいが、今ではあまり見るべき所もない小さな港町である。このトリエステのはずれに、ICTP（International Center for Theoretical Physics）という研究施設があり、そこで1991年の9月9日から3週間にわたって力学系の夏の学校が開かれた。主催者はJ. Palisと、Y. Sinaiで、世界中の多くの国々（特に発展途上国）の学生を100名以上も集めて行われた。私自身も学術振興会から旅費の援助を受けることができて国府さんと共にこの学校に参加する機会に恵まれた。初めての体験であったためにいろいろな（特に諜の）苦労はあったが、充実した楽しい三週間であった。今年も昨年の続編としてよりレベルを上げた夏の学校が二週間と、その後に、二週間のWorkshopが同じ研究所で5月から6月にかけて、計画されている。日本からも多くの人が参加できると良いと思い、ここでは、Schoolについて簡単な紹介をしようと思う。（案内は、国府さん、又は、私のところにあります。）

ＩＣＴＰは、トリエステの駅からバス2本を乗り継いで約20分、海の近くの景色の良い高台にある。もともとは、発展途上国における、理論物理学や数学の研究を援助するためのUNESCOと、国際原子力機関の施設で、それらの国から学生を招いたり、国と国の間の交流を促すなど多彩な活動をしている。今回の夏の学校もその一環ということで多くの参加者は、アジアやアフリカの発展途上国からの参加であった。研究所の中心はMain Buildingと呼ばれる四階建ての建物で、その中に講義が行われる大講義室、スタッフの部屋、図書室、そしてレストランが入っている。図書室は、多くの本があって充実しており、(イタリアでは、ほとんど考えられないことだが)日曜日もあいている。またレストランは、セルフサービスで、700円ぐらいで、パスタ、肉料理、サラダ、ワインがつき、味も上々。その他にICTPは、大きなゲストハウスを三つ持っていて、特にアドリアティコゲストハウスは、海辺の五ツ星ホテルをICTPが買いとったもので大変立派なものだ。これらを見るだけでも、いかに多くの人がICTPを訪れているかを知ることができる。

さて、Schoolは、はじめに所長の、物理学者A. Salamのあいさつの後、J. Palisが全体的な注意をし、全員が自己紹介をして始まった。1コマ目は、C. Zeemanの特別講義で、ダーウィン進化論とカタストロフィー理論についてであった。その後は月曜日から金曜日まで1日に1時間の講義が4つ又は5つ、更に参加者の中から希望者を募って、30分の講演が4つあったので、全てに参加すると、かなりハードなスケジュールになっていた。

講義は、主に7つの話題から成っていた。各話題について講師が1人と、助手(主として補講を担当する)が1人又は2人でそれぞれ6コマから9コマであった。各々の講義はよく準備されていて、講義ノートまで準備されていた。

① Hyperbolic Dynamics ... 講師 J. C. Yoccoz

(内容) Axiom A系の理論の基礎。初歩から始めて安定多様体定理を証明し、最後に局所積構造を持つ双曲集合の安定性までを話した。よくまとめられていてところどころさすがと思わせるところもあった。ただまとまりすぎていてはじめての人がこの講義を聞いてわかるだろうかと思った。

② Homoclinic Bifurcation and Sensitive-Chaotic Dynamics 講師 J. Palis, M. Pacifico M. Viana

(内容) 上のYoccozの講義をもとにして、Homoclinic分岐の話をした。主な内容は、York-Alligewoodの結果とNewhouseの結果で、話のペースが遅くて聞いていてイライラしたが、いろいろなエピソードを交えての熱演であった。

③ Analytic Differential Equations

講師 Il'yashenko, Yakovenko

(内容) いかにも明解な講義で多変数の複素関数についての基礎的な話から始まり、Poincaréの線型化定理、最後はHamilton系を摂動した時にいくつのLimit cycleが現われるかという問題について複素解析的な手法を紹介した。

④ Introduction to Lagrangian Variational Method

講師 R. Mañé , P. Duarte

(内容) はじめはモース理論をやり その中で使われる変分法的な手法について解説した。後半は 前半であつかった周期軌道の一般化として 不変測度を考えたときの議論(Aubry-Mather 理論)の紹介をした。Mañéは その見かけや論文に反して 講義は大変うまく, 感心した。

⑤ Dynamics of Complex Flows

講師 C. Camacho , LINS NETO

(内容) 2次元の complex flow, 特にその特異点の話をした。Camachoの講義は Blow upの話からはじめて separatrix 定理の証明を明解に述べていておもしろかった。

⑥ Hamiltonian Systems 講師 E. Zehnder, J. Pöschel

(内容) Zehnderは Hamilton flow が各エネルギーレベル多様体上で 周期軌道を持つかという問題について詳しく述べた。最後は Gromov の symplectic capacity との関係を話した。

⑦ Ergodic Theory 講師 Y. Sinai , K. Kanin

(内容) Sinaiの講義は 期待はずれであったが, その分. Kaninの補講が良かった。

その他に Brunner が 複素力学系について, Lanford が renormalizationについて 1コマずつ 話をした。講義ノートが 手元に有りますので 興味のある方は 知らせてください。

School on Dynamical Systems
(9 - 27 September 1991)

PROGRAMME

MONDAY, 9 September

08.30 - 10.00: Registration
10.30 - 11.00: Opening ceremony with Professor J. EELLS
11.00 - 12.00: C. ZEEMAN (Herthord College, Oxford, U.K.)
Dynamics of Darwinian Evolution
15.00 - 16.00: C. CAMACHO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (I)
16.00 - 17.30: J.-C. YOCCOZ (Université de Paris XI, France)
Hyperbolic Dynamics (I)

TUESDAY, 10 September

09.30 - 10.30: J. PALIS (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (I)
11.00 - 12.00: Y. IL'YASHENKO (Moscow State University, Moscow, U.S.S.R)
Analytic Differential Equations (I)
14.00 - 15.00:J.-C. YOCCOZ (Université de Paris XI, France)
Hyperbolic Dynamics (II)
15.15 - 16.15: R. MAÑÉ (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (I)
16.30 - 17.30: O. LANFORD (ETH, Zurich, Switzerland)
Universality and Renormalization (I)

WEDNESDAY, 11 September

08.50 - 09.50: Y. IL'YASHENKO (Moscow State University, Moscow, U.S.S.R)
Analytic Differential Equations (II)
10.00 - 11.00: A. LINS NETO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (II)
11.15 - 12.15: Ya. SINAI (Landau Institute for Theoretical Physics, Moscow, U.S.S.R) *Ergodic Theory (I)*
14.00 - 15.00: M.J. PACIFICO (Universidade Federal do Rio de Janeiro, Brazil)
Hyperbolic Dynamics - Examples
15.15 - 16.15: R. MAÑÉ (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (II)
16.30 - 17.30: K. KHANIN (Landau Institute for Theoretical Physics, Moscow, U.S.S.R) *Ergodic Theory (II)*

THURSDAY, 12 September

08.50 - 09.50: Ya. SINAI (Landau Institute for Theoretical Physics, Moscow, U.S.S.R) *Ergodic Theory (III)*
10.00 - 11.00: J.-C. YOCCOZ (Université de Paris XI, France)
Hyperbolic Dynamics (III)
14.00 - 15.00: M. VIANA (IMPA, Rio de Janeiro, Brazil)
Hyperbolic Dynamics - Examples
15.15 - 16.15: A. LINS NETO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (III)
16.30 - 17.30: O. LANFORD (ETH, Zurich, Switzerland)
Universality and Renormalization (II)

FRIDAY, 13 September

08.50 - 09.50: C. CAMACHO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (IV)
10.00 - 11.00: E. ZEHNDER (ETH, Zurich, Switzerland)
Dynamical Systems: Hamiltonian Systems (I)
11.15 - 12.15: P.M. DUARTE (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (III)
14.00 - 15.00: Ya. SINAI (Landau Institute for Theoretical Physics, Moscow, U.S.S.R) *Ergodic Theory (IV)*
15.15 - 16.15: Y. IL'YASHENKO (Moscow State University, Moscow, U.S.S.R)
Analytic Differential Equations (III)
16.30 - 17.30: B. BRANNER (The Technical University of Denmark, Lyngby, Denmark) *Iterates of Polynomial Maps: Topology of the Julia Set*

MONDAY, 16 September

08.50 - 09.50: Ya. SINAI (Landau Institute for Theoretical Physics, Moscow, U.S.S.R) *Ergodic Theory (V)*
10.00 - 11.00: J.-C. YOCCOZ (Université de Paris XI, France)
Hyperbolic Dynamics (IV)
11.15 - 12.15: Y. IL'YASHENKO (Moscow State University, Moscow, U.S.S.R)
Analytic Differential Equations (IV)
14.00 - 15.00: E. ZEHNDER (ETH, Zurich, Switzerland)
Dynamical Systems: Hamiltonian Systems (II)
15.15 - 16.15: R. MAÑÉ (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (IV)

Seminar Session:

16.30 - 17.00: S. Bolotin (Moscow State University, U.S.S.R) Variational methods for proving chaotic behavior in natural Hamiltonian systems
17.00 - 17.30: B. Toni (Université de Ouagadougou, Burkina Faso) Local bifurcation of critical points for symmetric cubic vector fields

TUESDAY, 17 September

08.50 - 09.50: J.-C. YOCCOZ (Université de Paris XI, France)
Hyperbolic Dynamics (V)
10.00 - 11.00: C. CAMACHO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (V)
11.15 - 12.15: J. PALIS (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (II)
14.00 - 15.00: K. KHANIN (Landau Institute for Theoretical Physics, Moscow, U.S.S.R) *Ergodic Theory (VI)*
15.15 - 16.15: M.J. PACIFICO (Universidade Federal do Rio de Janeiro, Brazil)
Hyperbolic Dynamics - Examples
Seminar Session:
16.30 - 17.00: P. Mendes (UFMG, Brazil) On topological structure of the arithmetic sum of two Cantor sets
17.00 - 17.30: M. Tsujii (Kyoto University, Japan) Weak regularity of Lyapunov exponent

WEDNESDAY, 18 September
08.50 - 09.50: S. YAKOVENKO (Institute of Control Sciences, Moscow, U.S.S.R)
Analytic Differential Equations (V)
10.00 - 11.00: J. PALIS (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (III)
11.15 - 12.15: E. ZEHNDER (ETH, Zurich, Switzerland)
Dynamical Systems: Hamiltonian Systems (III)
13.00 - 13.45: Computer Assisted Examples
14.00 - 15.00: R. MAÑÉ (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (V)
15.15 - 16.15: C. CAMACHO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (VI)
Seminar Session:
16.30 - 17.00: P. Mardesich (University of Zagreb, Yugoslavia) The versal unfolding of cusp of order n
17.00 - 17.30: A. Babin (MIIT, Moscow, U.S.S.R) Dynamics on attractor of the Navier-Stokes system and propagation of turbulence on tube

THURSDAY, 19 September
08.50 - 09.50: K. KHANIN (Landau Institute for Theoretical Physics, Moscow, U.S.S.R) *Ergodic Theory (VII)*
10.00 - 11.00: J.-C. YOCCOZ (Université de Paris XI, France)
Hyperbolic Dynamics (VI)
11.15 - 12.15: M. VIANA (IMPA, Rio de Janeiro, Brazil)
Hyperbolic Dynamics - Examples
14.00 - 15.00: P.M. DUARTE (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (VI)
15.15 - 16.15: A. LINS NETO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (VII)
Seminar Session:
16.30 - 17.00: F. Sanchez-Bringas (ICTP/UNAM, Mexico City, Mexico) Normal forms of local vector fields on a surface with isolated singularity and C^*-action
17.00 - 17.30: Yu. Maistrenko (Ukrainian Academy of Sciences, Kiev, U.S.S.R) Structures and space-temporal chaos in some infinite dimensional dynamical systems

FRIDAY, 20 September
08.50 - 09.50: J. PALIS (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (IV)
10.00 - 11.00: A. LINS NETO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (VIII)
11.15 - 12.15: Y. IL'YASHENKO (Moscow State University, Moscow, U.S.S.R)
Analytic Differential Equations (VI)
14.00 - 15.00: M.J. PACIFICO (Universidade Federal do Rio de Janeiro, Brazil)
Hyperbolic Dynamics - Examples
15.15 - 16.15: J. PÖSCHEL (Universität Bonn, Germany)
Dynamical Systems: Hamiltonian Systems (IV)
Seminar Session:
16.30 - 17.00: S. Dovbysh (Moscow State University, Moscow, U.S.S.R) Some structure of qualitative investigation of dynamics near separatrices for Hamiltonian systems qith one and half degrees of freedom
17.00 - 17.30: I. Labouriau (Universidade do Porto, Portugal) Twisted homoclinic loops and nerve impulse

MONDAY, 23 September
08.50 - 09.50: K. KHANIN (Landau Institute for Theoretical Physics, Moscow, U.S.S.R) *Ergodic Theory (VIII)*
10.00 - 11.00: J. PALIS (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (V)
11.15 - 12.15: S. YAKOVENKO (Institute of Control Sciences, Moscow, U.S.S.R)
Analytic Differential Equations (VII)
14.00 - 15.00: J. PÖSCHEL (Universität Bonn, Germany)
Dynamical Systems: Hamiltonian Systems (V)
15.15 - 16.15: E. ZEHNDER (ETH, Zurich, Switzerland)
Dynamical Systems: Hamiltonian Systems (VI)
Seminar Session:
16.30 - 17.00: M. Brunella (SISSA, Trieste, Italy) 3-dimensional expansive flow

17.00 - 17.30: W. Breymann (University of Basel, Switzerland) Linear response for 2-dimansional symplectic maps

TUESDAY, 24 September

08.50 - 09.50: S. YAKOVENKO (Institute of Control Sciences, Moscow, U.S.S.R)
Analytic Differential Equations (VIII)

10.00 - 11.00: A. LINS NETO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (IX)

11.15 - 12.15: M. VIANA (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (VI)

14.00 - 15.00: R. MAÑÉ (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (VII)

15.15 - 16.15: J. PÖSCHEL (Universität Bonn, Germany)
Dynamical Systems: Hamiltonian Systems (VII)

Seminar Session:

16.30 - 17.00: G. Jona Lasinio (Università "La Sapienza", Roma, Italy) Quantum chaos without chaotic counterpart

17.00 - 17.30: J. Estrada-Sarlabous (Instituto de Matematica, Havana, Cuba) Exact conditions for the existence of solitons of type kink and/or bell in a non-linear wave equations

WEDNESDAY, 25 September

08.50 - 09.50: Y. IL'YASHENKO (Moscow State University, Moscow, U.S.S.R)
Analytic Differential Equations (IX)

10.00 - 11.00: P.M. DUARTE (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (VIII)

11.15 - 12.15: J. PALIS (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (VII)

14.00 - 15.00: E. ZEHNDER (ETH, Zurich, Switzerland)
Dynamical Systems: Hamiltonian Systems (VIII)

Seminar Session:

15.15 - 15.45: L. Ortiz-Bobadilla (UNAM, Mexico City, Mexico) Topological equivalence of linear systems on C^n in presence of Jordan cells

15.45 - 16.15: Sun Wenxiang (Hebei Teachers' College, Shijiazhuang, P.R.China) Semidynamical systems

16.30 - 17.00: B. Dey (Institute for Plasma Research, Gandhinagar, India) Symbolic dynamics and unstable periodic orbits of a polynomial map

17.00 - 17.30: Nguyen Van Chau (Institute of Mathematics, Hanoi, Vietnam) Global structure of a polynomial autonomous system on the plane

THURSDAY, 26 September

08.50 - 09.50: J. PÖSCHEL (Universität Bonn, Germany)
Dynamical Systems: Hamiltonian Systems (VII)

10.00 - 11.00: M. VIANA (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (VIII)

11.15 - 12.15: A. LINS NETO (IMPA, Rio de Janeiro, Brazil)
Dynamics of Complex Flows (X)

14.00 - 15.00: R. MAÑÉ (IMPA, Rio de Janeiro, Brazil)
Introduction to Lagrangian Variational Methods (IX)

Seminar Session:

15.15 - 15.45: V. Maistrenko & I. Sushko (Ukrainian Academy of Sciences, Kiev, U.S.S.R) On some non-invertible maps

15.45 - 16.15: Ye Xiang Dong (ICTP/Univ. of Science & Technology, Hefei, P.R.China) *D*-function, topological entropy and Sharkovskii theorem

16.30 - 17.00: F. Berezovskaya (All-Union Centre for Forest Resources, Moscow, U.S.S.R) The principal part of planar vector fields with fixed Newton diagram

17.00 - 17.30: A. Shoshitaishvili (Ins. Problem Upravlenii, Moscow, U.S.S.R) Nonhyperbolic dichotomy and simulation of qualitative behavior of dynamical systems

FRIDAY, 27 September

10.00 - 11.00: J. PALIS (IMPA, Rio de Janeiro, Brazil)
Homoclinic Bifurcations and Sensitive-Chaotic Dynamics (IX)

11.15 - 12.15: E. ZEHNDER (ETH, Zurich, Switzerland)
Dynamical Systems: Hamiltonian Systems (X)

INTERNATIONAL ATOMIC ENERGY AGENCY
UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION
INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS
I.C.T.P., P.O. BOX 586, 34100 TRIESTE, ITALY, CABLE: CENTRATOM TRIESTE

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY
c/o INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS 34100 TRIESTE (ITALY) VIA GRIGNANO, 9 (ADRIATICO PALACE) P.O. BOX 586 TELEPHONE 040-224572 TELEFAX 040-224575 TELEX 460449 APH I

SCHOOL ON DYNAMICAL SYSTEMS
25 May - 5 June 1992

and

WORKSHOP ON DYNAMICAL SYSTEMS
8 - 19 June 1992

Miramare - Trieste, Italy

The International Centre for Theoretical Physics (ICTP) and the International Centre for Science and High Technology (ICS) will organize a School on Dynamical Systems from 25 May to 5 June 1992, which will be followed by a Workshop on the same topics from 8 to 19 June 1992. Both activities will be directed by Professors J. Palis (I.M.P.A., Rio de Janeiro, Brazil) and Ya. Sinai (Landau Institute for Theoretical Physics, Moscow, U.S.S.R.). Professor J. Moser (E.T.H., Zürich, Switzerland) will be Honorary Director.

I. PURPOSE AND NATURE

The aim of the School is to develop the mathematical theory of Dynamical Systems, as well as to discuss some applications to Physics.

II. PROGRAMME

Renowned international experts in the field, including C. Camacho, Yu.S. Il'Yashenko, R. Mañé, J. Moser, J. Palis, Ya. Sinai, C. Viterbo and J.-C. Yoccoz will give lectures on the following topics:

elements of bifurcations, strange attractors, invariant measures
dynamical physics/chaos
Hamiltonian and Lagrangian systems
symplectic dynamics/variational methods
polynomial differential equations, global and local aspects

School on Dynamical Systems

Bratislava, June 24-29, 1991

Preliminary Programme
(Subject to change)

Monday, 24 June

8,00-8,45 *Breakfast :*

LECTURES

: *Formal opening of the School*

9,00-9,55 *J.MALLET-PARET :* ***Low Dimensional Dynamics in High Dimensional Systems-I***

coffee break

10,15-11,10 *Hiroshi MATANO :* ***Dynamics of Nonlinear Diffusion Equations- I***

11,15-12,10 *Xavier MORA :* ***A Survey of Navier-Stokes Equations - I***

12,45-13,45 *Lunch :*

COMMUNICATIONS

15,30-15,55 *Viktor KERTÉSZ :* ***Investigation of the structure of super long bifurcation formulae***

16,00-16,25 *Marietta KERN :* ***Multiparameter Bifurcation in Applied Problem***

16,30-16,55 *Michal FEČKAN :* ***Discretization of Second Order Variational Systems***

17,05-18,00 *Hiroshi KOKUBU :* ***On a Homoclinic Doubling Theorem in Vector Fields***

18,30-19,15 *Dinner :*

Tuesday, 25 June

8,00-8,45 *Breakfast :*

LECTURES

9,00-9,55 *Hiroshi MATANO :* ***Dynamics of Nonlinear Diffusion Equations- II***

coffee break

10,15-11,10 *Yurij BIBIKOV :* ***Multifrequency Oscillations in Nonlinear Systems - I***

11,15-12,10 *J.MALLET-PARET :* ***Low Dimensional Dynamics in High Dimensional Systems-II***

12,45-13,45 *Lunch :*

COMMUNICATIONS

15,30-15,55 *Peter FROLKOVIČ :* ***A Remark to the Liapunov-Schmidt Procedure***

16,00-16,25 *Henryk ŻOLODEK :* ***On the Center Problem***

16,30-16,55 *J.A. SANDERS :* ***Computation of versal normal form***

17,05-18,00 *Xavier MORA :* ***A Survey of Navier-Stokes Equations - II***

18,30-19,15 *Dinner :*

Wednesday, 26 June

8,00-8,45 *Breakfast :*

LECTURES

9,00-9,55 *J.MALLET-PARET :* ***Low Dimensional Dynamics in High Dimensional Systems-III***

coffee break

10,15-11,10 *Xavier MORA :* ***A Survey of Navier-Stokes Equations - III***

11,15-12,10 *Hiroshi MATANO :* ***Dynamics of Nonlinear Diffusion Equations - III***

12,45-13,45 *Lunch :*

free afternoon

18,30-19,15 *Dinner :*

19,45-20,10 *Karol MIKULA :* ***Numerical Realization of Some Effects in Degenerate Diffusion Equations***

20,15-20,40 *Tibor ŽÁČIK :* ***On generic properties of n-th order differential equations***

Thursday, 27 June

8,00-8,45 *Breakfast :*

LECTURES

9,00-9,55 *Howard LEVINE : Critical Blow-Up Exponents for Single Equations - A Survey*

coffee break

10,15-11,10 *Fred WEISSLER : Asymptotic Behavior of Conservative Hyperbolic Equations - I*

11,15-12,10 *Yurij BIBIKOV : Multifrequency Oscillations in Nonlinear Systems - II*

12,45-13,45 *Lunch :*

COMMUNICATIONS

15,00-15,25 *Jaroslav KWAPISZ : Rotation sets of the two dimensional torus*

15,30-15,55 *Hans-Oto WALTHER : Unstable manifolds for a differential delay equatio*

16,00-16,25 *Joszef TERJEKI : On the periodic solution of a nonlinear wave equation*

16,30-16,55 *Andrzej Lasota : Volterra-Markov Operators*

17,05-18,00 *Sigurd ANGENENT : Curvature Driven Evolutions - I*

party

Friday, 28 June

8,00-8,45 *Breakfast :*

LECTURES

9,00-9,55 *Sigurd ANGENENT : Curvature Driven Evolutions - II*

coffee break

10,15-11,10 *Howard LEVINE : Extensions of Fujita's Results for Parabolic Systems*

11,15-12,10 *Fred WEISSLER : Asymptotic Behavior of Conservative Hyperbolic Equations - I*

12,45-13,45 *Lunch :*

COMMUNICATIONS

15,30-15,55 *Janusz MIERCZYNSKI : Monotone semiflows on Banach bundles*

16,00-16,25 *Peter MALIČKÝ : On a hydrodynamical conjecture of V.I.Arnold*

16,30-16,55 *Barnabas GARAY : On Infinite-dimensional Topology and Dynamical Systems in Banach Spaces*

17,05-18,00 *Yurij BIBIKOV : Multifrequency Oscillations in Nonlinear Systems - III*

18,30-19,15 *Dinner :*

Saturday, 29 June

8,00-8,45 *Breakfast :*

LECTURES

9,00-9,55 *Fred WEISSLER : Asymptotic Behavior of Conservative Hyperbolic Equations - II*

coffee break

10,15-11,10 *Sigurd ANGENENT : Curvature Driven Evolutions - III*

11,15-11,40 *Hiroshi KOKUBU : Construction of a Vector Field which has a heteroclinic loop at Glendinning-Sparrow T-point*

12,45-13,45 *Lunch :*

departure

First Announcement

Equadiff 91

International Conference on Differential Equations

Barcelona, August 26-31, 1991

Continuation of the West European Equadiff Series (Marseille 1970, Brussels 1973, Florence 1978, Würzburg 1982, Xanthi 1987) on ordinary differential equations, partial differential equations, their numerical treatement and related topics.

Scientific Committee

P. Brunowsky, R. Conti, J.K. Hale, J. Mawhin, G.R. Sell, Ya.G. Sinai, F. Takens, R. Temam, O.C. Zienkiewicz.

Organizing Committee

C. Perelló, C. Simó, J. Solà-Morales.

Site

Zona Universitària, City of Barcelona, Catalunya, Spain.

(Confirmed) Invited Speakers

The list of speakers will include: L. Arnold, J. Ball, H. Broer, A. Delshams, L. Demkowicz, F. Dumortier, W. Eckhaus, E. Fernández Cara, B. Fiedler, G. Fusco, M. Golubitsky, K.P. Hadeler, J.K. Hale, W. Jäger, J. Kačur, O.A. Ladyzhenskaja, V.F. Lazutkin, J. Llibre, X. Mora, K. Morgan, K.W. Morton, A.J. Neischtadt, M. Poláčik, P.A. Raviart, J.M. Sanz-Serna, V.A. Solonnikov, F. Takens, J.L. Vázquez, J.R. Whiteman, Ye Yanqian.

Contributed Papers and Proceedings

Besides the invited lectures, contributed papers of 15 minutes of duration will be presented by participants. Invited and contributed papers (after being refereed) will be published in a special volume.

Information

A forthcoming second announcement will be sent including more information and registration instructions. To contact the Organizing Commitee, please write to: Prof. C. Perelló, Equadiff 91/Dept. Matemàtiques/ Universitat Autònoma de Barcelona/08193 Bellaterra (Barcelona)/Spain
E-mail: D3MACST0@EB0UB011.BITNET

International Workshop on Dynamical Systems

Porto, Portugal

3 – 8 August 1992

Scientific Committee

A. Douady, J. Moser, S. Newhouse, J. Palis, W. Parry, Y. Sinai, J.-C. Yoccoz

Organising Committee

M. Carvalho, M. A. Chaves, M. Pollicott, J. Rocha, M. Viana

The Conference will be held in the Faculty of Sciences of the University of Porto (Oporto). It will consist of plenary talks and parallel sessions, with ample opportunity for private discussions between the participants. Speakers from 15 countries are expected.

Porto, the second largest portuguese city is placed at the heart of one of the country's most important touristic regions and is well known for the famous Port Wine, made from vines grown on the banks of the Douro river.

This is a first announcement. To receive the second announcement please contact the following address:

Workshop on Dynamical Systems
Departamento de Matemática Pura
Faculdade de Ciências do Porto
4000 Porto, PORTUGAL

Telephone : (351)(2) 310290
E-mail† : sisdin@fc.up.pt
Fax : (351)(2)2008628
Telex : 28109

Support for this conference has been solicited from scientific, academic and commercial sources. Control Data Portuguesa has already decided to sponsor this Workshop.

†Not reliable for the moment: use fax if you get no answer to your e-mail message.

Phila., PA

SIAM Conference on APPLICATIONS OF DYNAMICAL SYSTEMS

October 15-19, 1992,
Snowbird Resort and Conference Center
Salt Lake City, Utah

Sponsored by SIAM Activity Group on Dynamical Systems

Call for Papers, Registration Information, and Abstract Form

Invited Presentations

Dynamics of 2-Dimensional Maps
Michael Benedicks, Department of Mathematics, Royal Institute of Technology, Sweden

Computational Complexity and Chaos
Lenore Blum, International Computer Science Institute, Berkeley

Dynamical Systems Problems for the Superconducting Supercollider
James Ellison, Department of Mathematics and Statistics, University of New Mexico

Splitting of Separatrices and Arnol'd Diffusion
Giovanni Gallavotti, Department of Physics, University of Rome, Italy

Chaos and Fractals in Physiology and Medicine
Ary Goldberger, Harvard Medical School and Beth Israel Hospital, Boston

Symmetric Chaos
Martin Golubitsky, Department of Mathematics, University of Houston

Dynamics, Symmetry and Turbulence
Philip Holmes, Department of Theoretical and Applied Mechanics, Cornell University

Semiflow Behavior from a Partial Differential Equation in the Presence of Noise
Michael Mackey, Center for Nonlinear Dynamics, McGill University, Canada

Stability, Instability and Bifurcation by the Energy-Momentum Method
Jerry Marsden, Department of Mathematics, University of California, Berkeley

Chaos in Near-Integrable Systems
David McLaughlin, Department of Mathematics, Princeton University

Complex Polynomial Dynamics
John Milnor, Department of Mathematics, State University of New York, Stony Brook

Spatio-temporal Chaos in Reaction-Diffusion Systems
Harry Swinney, Center for Nonlinear Dynamics, University of Texas, Austin

Minisymposia

A minisymposium is a session normally consisting of four presentations on a topic selected to augment the presentations of the invited speakers and the conference themes. Following is a partial list of the minisymposia and organizers planned for this conference.

Signal Processing and Chaos
Henry D.I. Abarbanel, University of California, San Diego

Geometric Methods for Maps of the Plane
Marcy Barge, Montana State University

Dynamical Systems Problems in Control Theory
Christopher C. Byrnes, Washington University

Dimension Calculations
Robert Cawley, U.S. Naval Surface Warfare Center

Dynamics of Infinite-Dimensional Problems
Shui-Nee Chow, Georgia Institute of Technology

Control of Chaos
David Delchamps, Cornell University

Pattern Formation
Paul Fife, University of Utah

Integrable Systems
A.S. Fokas, Clarkson University, and I.M. Gel'fand, Rutgers University

Computer Techniques for the Numerical Study of Dynamical Systems
Celso Grebogi, University of Maryland, College Park

Neural Nets
Stephen Grossberg, Boston University

Dynamical Systems of Nonlinear Optics in Resonant Media
Darryl Holm, Los Alamos National Laboratory

Hyperbolicity in Skew Product Flows
Russell A. Johnson, University of Southern California, and University of Florence, Italy

Nonlinear Optics and Hamiltonian Systems
William Kath, Northwestern University

Problems in Mathematical Biology
James Keener, University of Utah

Inertial Manifolds and Low Dimensional Dynamics of PDE's
Yannis Kevrekidis, Princeton University, and Edriss Titi, University of California, Irvine

Saddle Orbits
Eric J. Kostelich, Arizona State University

Dynamics of Mechanical Problems
Mark Levi, Rensselaer Polytechnic Institute

Invariant Manifolds
Kening Lu, Brigham Young University

Transport in Symplectic Maps
James Meiss, University of Colorado, Boulder

Nonlinear Optics
Jerry Moloney, University of Arizona

Differential-Delay Equations
Roger Nussbaum, Rutgers University, and John Mallet-Paret, Brown University

Symplectic Integration
C. Scovel, Los Alamos National Laboratory

Turbulence and Chaotic Behavior in Fluids
Katepalli Sreenivasan, Yale University

AIDS Epidemiology and Dynamical Models
Ann Stanley, Iowa State University and Los Alamos National Laboratory

Nonlinear Oscillations
Steven Strogatz, Massachusetts Institute of Technology

Chaotic Behavior and Nerve Bursting
David H. Terman, Ohio State University, and John Rinzel, National Institutes of Health

Infinite-Dimensional KAM Theory
C. Eugene Wayne, Pennsylvania State University

Stochastic Resonance
Kurt Wiesenfeld, Georgia Institute of Technology

Dynamical Problems in Theoretical Chemistry
Stephen Wiggins, California Institute of Technology, and Gregory Ezra, Cornell University

7．　その他

白岩先生から1994年に日本で力学系関係の国際シンポジウムを計画しているという情報をいただきました．現在のところ５月後半に東京周辺で開催しようという案があるそうです．皆さんのご協力をお願いしますとのことでした．

この力学系通信の発送先のデータベースを作りました．MaCintoshのファイルメーカーというソフトウエアで使用できます．必要な方は笹野さんに御請求ください．

今回は前回からずいぶん時間があいてしまったため大部なものになってしまいました．原稿や情報をお寄せいただいた方々，また編集を手伝っていただいた方々にお礼を申し上げます．