力学系通信

０。今回は力学系通信の発行がおくれましたことをお詫び致します。

１。シンポジュウムの予告

　　前回の１２号でお知らせしたように、数理解析研究所に川上氏から申請されていた力学系の共同研究集会（１９９０年度）は補欠となっていましたが、次のように開催される事になりました。

　　研究集会「応用分野に於ける力学系理論の諸問題」　（代表者川上博）
　　期間：平成３年１月２８日（月）－３１日（木）

２。シンポジュウムの報告：力学系国際シンポジュウム　（於、Santiago-Chile）

　　昨年１１月から１２月にかけて１週間、上記のシンポジュウムが開催され、日本からは、白岩、青木、松元、伊藤秀一、岡、国府、池上の７人が参加した。この頃のサンチャゴは乾燥した夏で、７人共具合の悪くなった腸をいたわりながら頑張った。（原因は水に含まれるチタンの量であるとの説がある。）　以下に講演のリストを示しますが、詳細は参加者にお訊き下さい。

III ESCUELA INTERNACIONAL DE SISTEMAS DINAMICOS
UNIVERSIDAD DE SANTIAGO DE CHILE
26-11-90 a 02-12-90

Palis, Jacob Jr. (IMPA, Brasil): Non-hyperbolic System

Matsumoto, Shigenori (Nihon University, Japón): Discrete Group action on the circle.

Bamón, Rodrigo (Universidad de Chile, Chile): Cantor sets, Numerical Invariants and Perron - Frobenius Theory.

Camacho, María Izabel (Universidad Federal do Rio de Janeiro, Brasil): Moduli of Stability for homogeneus vector fields

Dumortier, Freddy (Limburgs University, Bélgica) Blowing up of unfoldings and limit cycles near sigularities

Felmer, Patricio (Universidad de Chile, Chile): Heteroclinic Orbits for some Hamiltonian Systems

Gutiérrez, Carlos (IMPA, Brasil). On planar dissipative Vector fields

Sánchez, Gloria (Universidad de los Andes, Venezuela). Mechanics, reduction and Stability

Martinez, Servet (Universidad de Chile, Chile). Dynamics associated to quasi-periodic distributions

Gambaudo, Jean Marc (CNRS, Université de Nice, Francia). Topological dynamics in dimension 2. Two simple remarks

Roussarie, Robert (Université de Bourgogne, Francia). Canard Cycles and Central Manifolds

de Melo, Welington (IMPA, Brasil). Renormalizations and University in one-dimensional dynamics

Martins, Julio C. (Universidad Estadual de Sao Paulo, Brasil). Ressurgencia de series mejorantes e Transformacoes simplecticas

Ayala, Víctor (Universidad Austral de Valdivia, Chile). Observabilidad y representaciones de grupos

Saéz, Eduardo (Universidad Técnica Federico Santa María, Chile). A computer method to Obtain weak focus

Ito, Hidekazu (Tohuku University, Japón). Integrability of Hamiltonian Systems and Birkhoff normal forms in resonant cases.

Paternain, Miguel (Universidad de la República, Uruguay). Expansive flows on surfaces

Tirapegui, Enrique (Universidad de Chile, Chile). Dynamics of defects in extended Systems

Vera, Jaime (Universidad Católica del Norte, Chile). Estabilidad y Bifurcaciones con pérdida de estabilidad para campos hiperbólicos en dimensión tres

Pacífico, María José (Universidad Federal de Río de Janeiro, Brasil). Stable arcs of vector fields going through singular Cycles

Kliemann, Wolfang (Iowa State University, USA). A dynamical Systems Approach to Control

Vieitez, José (Universidad de la República, Uruguay). Three dimensional expansive homeomorphisms

García, Rolando (Universidad Federal de Goias, Brasil). Linhas de curvatura na vizinhanca de um ciclo principal

Pinto, Manuel (Universidad de Chile, Chile). Ecuaciones Diferenciales Funcionales cercanas a Ecuaciones Diferenciales Ordinarias

Chow, S.N. (Georgia Techonology Institute). Heteroclinic and periodic orbits for a class of singulary perturbed dalay Systems

Aoki, Nobuo (Tokyo Metropolitan, University, Japón). The sets of axiom Λ Diffeomorphisms

Rebolledo, Rolando (Pontíficia Universidad Católica de Chile, Chile). Regularity of the flow for anticipating stochastic dynamical Systems

Teixeira, Marco A. (Universidad Estadual de Campinas, Brasil). <u>Periodic orbits on manifolds with boundary</u>

Ikegami, Giko (Nihon University, Japón). <u>Non-density of Ω-stable endomorphisms</u>

Kokubu, Hiroshi(Kyoto University, Japón). <u>Supplement to homoclinic doubling bifurcations of vector fields</u>

Rocha, Jorge (Porto, Portugal and IMPA, Brasil). <u>Centralizer of Real Analytic Diffeomorphisms</u>

Billeke, Jorge (Universidad de Santiago de Chile, Chile). <u>Bifurcations of weakly forced Lienard Equations</u>

Viana, Marcelo (IMPA, Brasil: Porto, Portugal). <u>Homoclinic Bifurcations and Strange Attractors</u>

Muñoz, Eduardo (Universidad Católica del Norte, Chile). <u>Comportamiento dinámico para un modelo de competencia de poblaciones</u>

Blázquez, Camilo (Universidad Técnica Federico Santa María). A moduli of <u>Stability for the Sil'nikov Theorem</u>

Soares, Marcio (Universidad Federal de Minas Gerais, Brasil). <u>On Algebraic solutions of foliations in dimension two</u>

Lins Neto, Alcides (IMPA, Brasil). <u>Irreductible components of codimension one holomorphic foliations in CP(n), n > 2</u>

Guiñez, Víctor (Universidad de Chile, Chile). <u>A characterizations of structurally stable quadratic differential forms</u>

Oka, Hiroe (Ryukoku University, Japón). <u>Singular perturbation for certain types of ordinary differential equations and heteroclinic bifurcations</u>

Markarian, Roberto (Universidad de República, Uruguay). <u>Chaotic plane billiards with symmetric potentials</u>

Moussú, Robert (Université de Bourgogne, Francia). <u>Hyperbolic holonomy of minimal sets</u>

Verjovsky, Alberto (ICTP, Italia). <u>The Witten-Jones invariant for flows on a 3-Dimensional manifold</u>

Newhouse, Sheldon(University of North Caroline, USA). <u>Symbolic Dynamics in low dimensional Systems</u>

　以上の講演の他に次の2つの講義が学生向けに、早朝の時間を使って連日行なわれた。

Viana, Marcero, Homoclinic bifurcation.

Markanian, Roberto, Introduction to the ergodic theory of biliards on the plain.

3。プレプリント

以下 国府寛司・岡宏枝 氏 より

1, M. J. Dias Carneiro and J. Palis, Bifurcations and global stability of families of gradients to appear in Publ. I. H. E. S.

2, J. Ecalle, Finitude des cycles-limites et accelero-sommation de l'application de retour.

3, J. Sotomayor and M. A. Teixeira, Periodic orbits near the boundary of a 3-dimensional manifold.

4, J. Franks, Periodic points and rotation numbers for area preserving diffeomorphisms of the plane.

5, D. K. Chaikovsky, A. A. Chernikov and A. I. Neishtadt, Adiabatic chaos and diffusion of particles.

6, F. Dumortier, Transition functions and moduli of stability for 3-dimensional homogeneous vector fields with a hyperbolic blowing-up.

7, F. Dumortier and R. Roussarie, On the saddle loop bifurcation.

8, F. Dumortier, R. Roussarie and J. Sotomayor, Generic 3-parameter families of planar vector fields. Unfolding of saddle, focus and elliptic singularities with nilpotent linear parts.

9, F. Dumortier and R. Roussarie, Cubic Lienard equations with linear damping.

10, F. Dumortier and P. Fiddelaers, Quadratic models for generic local 3-parameter bifurcations on the plane.

11, K. Rusek, Polynomial automorphisms.

12, G. Meisters and Cz. Olech, Strong nilpotence holds in dimensions up to five only.

13, Z.-F. Zhang and B.-Y. Li, High order Melnikov functions and problem of uniformity in global bifurcation.

14, Ju. S. Il'yashenko, Global analysis of the phase portrait for Kuramoto-Sivashinsky equation.

15, G. Caginalp and Y. Nishiura, The existence of travelling waves for phase field equations and convergence to sharp interface models in the singular limit.
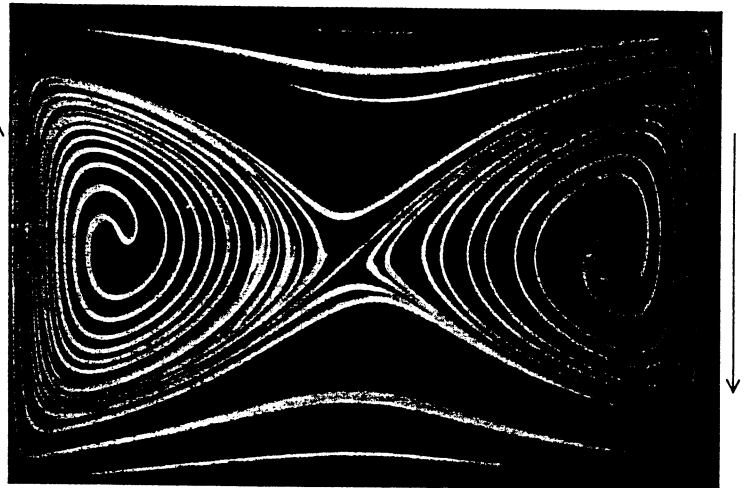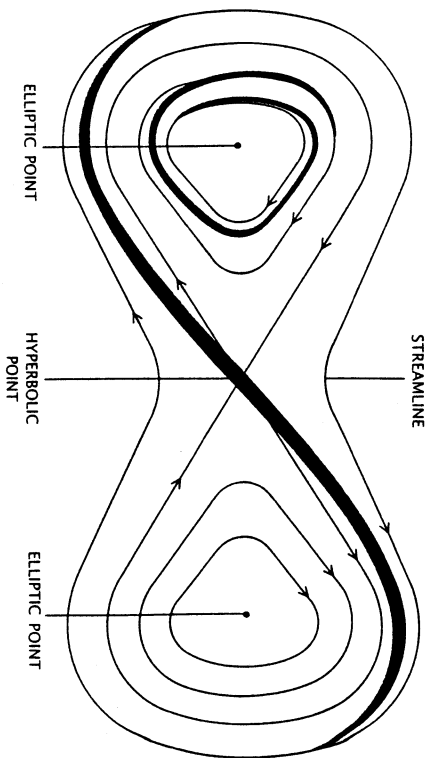
16. P. Holmes, J. Marsden and J. Scheurle, Exponentially small splitting of separatrices.

17. J. Palis, Sistemas caóticos ou turbulentos.

18. M. Komuro, Bifurcation equations of continuous piecewise-linear vector fields.

19. S. Hayashi, Diffeomorphisms in $\mathcal{F}^1(M)$ satisfy Axiom A.

20. Yu. A. Mitropolsky, Development of the averaging method using group transformations of Lie theory.

21. S.-N. Chow and K. J. Palmer, On the numerical computation of orbits of dynamical systems: the one-dimensional case.

22. S.-N. Chow and K. J. Palmer, On the numerical computation of orbits of dynamical systems: the higher dimensional case.

23. S.-N. Chow and E. S. van Vleck, Algorithms for true and numerical orbits of random maps.

24. A. Capietto, J. Mawhin and F. Zanolin, A continuation approach to superlinear periodic boundary value problems.

以下三波氏より
25. Yun Ping Jiong, Ratio geometry in dynamical systems.
26. -----, Local normalization of one dimensional map.
27. -----, The leading gap determines the geometry of the cantor set.
28. -----, Generalized Uram-Van Neumann transformations.
29. E. Bedford & J. Smillie, Polinomial diffeomorphisms of C^2 : Currents, Equilibrium measure and Hyoerbolicity.
30. D. A. Rand, The global rigidity conjecture and convergence of renormalization.
31. -----, Existence, non-existence and universal breakdown of dissipative golden invariant tori.

以下松岡氏より
32. P. Boyland, Rptation sets and monotone periodic orbits for annulus homeomorphisms.
33. Lectures by P. L. Boyland and J. Franks, Notes on Dynamics of surface homeomorphisms.
34. L. H. Erbe, K. Geba & W. Krawcewicz, Equivariant fixed point index and the period-doubling cascades.

以下は池上が持っています。

35. J.-C.Yoccoz, Theoreme de Siegel,Polynomes quadratiques et nombres de Brjuno.

36. S.E.Troubetzkoy, A comparison of elastic and inelastic billiards.

37. -----, Stochastic stability of dispersing billiards.

38. R.Labarca, A note on the intersection of codimension one submanifolds in Diff^r(M).

39. J.C.Caballos & R. Labarca,A note on a modulus of stability for Sil'nikov singularities.

40. F.Colonius, Remarks on ergodic yheory of stochastic flows and control flows.

41. -----, Lyapunof exponents of control flows.

以下は国内の著者です。

42. M.Komuro, Bifurcation equations of continuous pieswise-linear vector fields.

43. N.Aoki, The set of axiom A diffeomorphisms with no cycle.

44. S.Hayashi, Diffeomorphisms in F^1(M) satisfy axiom A.

45. M.J.Davis,R.S.MacKay & A.Sannami, Marcov shifts in the Henon family.

46. K.Odani On the C^1 stability conjecture for circle endomorphisms.

47. -----, A characterization of C^1 structurally stable endomorphisms on the circle.

49. K.Tchizawa, On a quasi-potential in nonlinear circuits.

ELLIPTIC AND HYPERBOLIC POINTS are typical features of flows in two dimensions. The photograph (*bottom*), made by Leong and the author, shows such a flow, generated as opposite sides of a rectangular cavity filled with glycerine were moved in opposite directions at constant speed. The orange lines (produced by a tracer originally injected along a line extending from the lower left to the upper right corner of the cavity) are nearly aligned with the flow's streamlines, the lines that moving fluid particles follow in steady flows. The flow pattern contains three fixed points: a central hyperbolic point and two elliptic points on each side of it. The flow near each elliptic point (*top*) produces a whorl that rotates clockwise; it increases the length of the tracer linearly with time. Flow in the vicinity of a hyperbolic point approaches the point in one direction and leaves it in another. Because the fluid material cannot cross streamlines, such a steady two-dimensional flow is ineffective in mixing. If the flow is made to vary with time, however, then the stretched filaments of tracer do not have enough time to align themselves with new streamlines and are thereby quickly folded by a change in the direction of the flow.