CONTENTS

SYMPOSIUM LECTURES

Т	on the measure-preserving flow on the torus (1. SALIO)	1
2	Breaking of waves (E.C. ZEEMAN)	2
3	Group extensions of discrete dynamical systems (W. PARRY)	6
14	Conditions for integrability of certain differential equations (J. KURZWEIL)	9
5	Formalisme Lagrangien (C. GODBILLON)	9
6	Continuous flows on the plane (A. BECK)	12
7	Non-linear cubic differential equations (T.V. DAVIES)	13
8	Mathematical theory of general systems (M.D. MESAROVI ${\mathfrak C}$)	14
9	Mathematical theory of multi-level systems (M.D. MESAROVIĆ)	15
10	Geometric elements in the theory of transformations of ordinary second-order linear differential equations (0. BORÜVKA)	15
11	Dynamical systems on an n-torus (T. SAITO)	18
12	Continuous flows on the plane: techniques I (A. BECK)	19
13	Continuous flows on the plane: techniques II (A. BECK)	21
14	Generalisation of Bendixson's theory (T. SAITO)	23
15	Geodesic flows (L.W. GREEN)	25
16	Instability (M. SHUB)	28
17	One-parameter families of diffeomorphisms(P. BRUNOVSKÝ)	29
18	Topology and mechanics (S. SMALE)	33
19	Generic properties of conservative systems (R.C. ROBINSON)	35
20	Dynamical systems on nilmanifolds (W. PARRY)	36
21	Linearizing a diffeomorphism (C. PUGH)	38
22	Topologically transitive diffeomorphisms of \mathtt{T}^{L} (M. SHUB)	39
23	Ω -explosions (J. PALIS)	40

24	Singularities of exponential maps (A. WEINSTEIN)	42
	Periodic points, measures and Axiom A (R. BOWEN)	44
	Holomorphic vector fields on CP ² (J. GUCKENHEIMER)	
	•	45
27	Small delays don't matter (J. KURZWEIL)	47
28	Conjugacy and ergodicity (P. WALTERS)	49
29	SL(n,R) actions (C. SCHNEIDER)	51
30	Diff (M) is simple? (D. EPSTEIN)	52
31	Distributed parameters control (R. CONTI)	54
32	Flows outside a compact invariant set (T. SAITO)	56
33	Non-linear Volterra equations (J. NOHEL)	58
34	Ergodic Hamiltonian theory (L. MARKUS)	60
35	Subharmonic solutions to Duffing's equation (M. URABE)	62
36	Similarity of automorphisms of the torus (R. ADLER)	63
37	Differential equations with periodic coefficients (B. SCHMITT)	64
38	An algebraic approach to dynamical systems (R. ELLIS)	66
39	Volterra equations and semi-flows (J. NOHEL)	69
40	Homomorphisms of minimal sets (J. AUSLANDER)	71
41	Boundedness of solutions of 2^{nd} order equations (DAME MARY CARTWRIGHT)	73
42	Möbius transformations in stability theory (R.A. SMITH)	75
43	Some maximum principles for Itô equations (I. VRKOČ)	76
44	A periodic wave propagation model for pattern formation in embryos (B. GOODWIN)	79
45	Intrinsically ergodic systems (B. WEISS)	81
46	The group of diffeomorphisms, and motion of fluids (D. EBIN)	83
47	Positional information and the spatial pattern of	85
	cellular differentiation (L. WOLPERT)	
48	Bifurcations (K. MEYER)	86

50	Invariant subsets of hyperbolic sets (M. HIRSCH)	90
51	The principle of Maupertuis (C. GODBILLON)	91
52	Instability in Diff $^{\mathbf{r}}(\mathtt{T}^3)$ (C. SIMON)	94
53	A global concept of stability under persistent perturbations (P. SEIBERT)	97
54	Hausdorff dimension and transversality of discrete flows (H. FURSTENBERG)	99
55	Universal foliations (A. PHILLIPS)	102
56	Foliations of the plane (C. GODBILLON)	104
57	Synthesis of control systems on manifolds (A. HALANAY)	106
58	Foliations and transformation groups (M. HIRSCH)	108
	SEMINAR ON FOLIATIONS	
59	Report on Bott's theorem on foliations (J. WOOD)	110
60	Topological equivalence of foliations (H. ROSENBERG)	112
61	Foliations (G. REEB)	114
62	Difféomorphismes du tore T ³ (F. LAUDENBACH)	116
63	Foliations (R. ROUSSARIE)	118
64	Algebraic invariants of foliations (B. REINHART)	119
65	Work of Gromov: generalization of the Smale-Hirsch Theorem (A. PHILLIPS)	120
	SUMMER SCHOOL LECTURES	
	List of speakers at the afternoon sessions of the Summer School	123
1	Foliations of codimension one (G. REEB)	124
2	Expanding attractors (R. WILLIAMS)	125
3	Equivalence of dynamical systems (S.A. ROBERTSON)	127
4	Generic bifurcation (K. MEYER)	128
5	Probabilistic convergence of approximations for partial differential equations (H. KUSHNER)	129
6	Mathematical structure of network synthesis (R. BROCKETT)	131
7	Actions of R ² on manifolds (H. ROSENBERG)	133

8	A generalization of Mackey's imprimitivity theorem (K. PARTHASARATHY)	135
9	Algebraic problems in dynamical systems (R.E. KALMAN)	138
10	Almost periodic minimal sets (DAME MARY CARTWRIGHT)	139
11	Anosov diffeomorphisms (J. FRANKS)	142
12	Sufficiency of jets (T.C. KUO)	143
13	Asymmetric manifolds (R. PALAIS) (Report withdrawn)	146
14	Universal unfoldings (J. MATHER) (Report not received)	146
15	Functional-differential systems and pattern learning (S. GROSSBERG)	147
16	Stability theory for partial differential equations (P. PARKS)	151
17	A functional approach to stability of differential equations (J.F. BARRETT)	155
18	Numerical analysis of nonlinear oscillations (M. URABE)	158
19	Dichotomies and stability theory (W.A. COPPEL)	160
20	Commuting diffeomorphisms (N. KOPELL)	162
21	Predictions for the future of differential equations (R. ABRAHAM)	163
	For Ralph	167
	AUTHOR INDEX and LIST OF ADDRESSES	168