CONTENTS

		Page No.
	Preface	v
	1. KEYNOTE PAPERS	
1.	I. ELISHAKOFF Convex versus probabilistic models of uncertainty in structural dynamics	3
2.	N. JONES Some recent advances in structural impact	22
3.	G.R. TOMLINSON The use of higher order frequency response functions in nonlinear structural dynamics	43
4.	R.A. IBRAHIM Nonlinear random vibration experimental results and research needs	58
5.	R. VAICAITIS Recent advances of time domain approach for nonlinear response and sonic fatigue	84
	2. ANALYTICAL METHODS	
6.	J. NÁPRSTEK, J. ČENSKÝ Dynamic response of a beam on two dimensional continuum to moving periodic loading	107
7.	D.J. GORMAN Accurate free vibration analysis of the completely free rectangular orthotropic plate	117
8.	R.K. SINGAL and D.J. GORMAN Experimental and analytical study of the free vibration of thin rectangular plates resting on rigid-point supports and with attached masses	127

9.	Y.N. GONG and X. WANG Radial vibrations and dynamic stresses in elastic hollow cylinders	137
10.	B.A.T. PETERSSON Moment and force excitation at edges and corners of beam- and plate-like structures	148
11.	L.L. KOSS and W. XU Power transfer to a structure using frequency response functions	158
12.	D. LEDNIK and R.J. PINNINGTON Transient power flow between coupled beams in longitudinal vibrations	168
13.	T. IGUSA Critical configurations of systems subjected to wide-band excitation	178
	3. NUMERICAL METHODS	
14.	C. FRANCIOSI and Z-X LI Analysis of coupled bending and torsional vibrations of nonclassically damped beams	191
15.	K-M HSIAO and R-T YANG Dynamic behaviour of planar flexible mechanisms with member initial curvature	201
16.	A. POTIRON Finite Element formulation of naturally curved and twisted beams, including non-uniform warping	211
17.	N.S. BARDELL Free vibration analysis of a flat plate using the hierarchical finite element method	221
18.	G. AKSU and M.B. FELEMBAN Vibration of Mindlin square plates with point supports on the diagonals	231
19.	S.A. RIZZI Dynamic stress intensity analysis of cracked panels	244
20.	N.S. BARDELL The free vibration of cylindrically-curved rectangular panels	254

21.	R.G. SAUVE and R.N. DUBEY Efficient shell elements for three-dimensional non-linear structural dynamic analysis	264
22.	M.D. OLSON Progress in modelling the response of blast loaded stiffened plates and cylindrical shells	277
23.	S. SYNGELLAKIS and R.W. EBDON Platform removal by explosive cutting: effect of stress waves on structural integrity	289
24.	J. QIN, D.T. NGUYEN and Y. ZHANG A parallel-vector Lanczos eigen-solver for structural vibration problems	299
25.	G.J.W. HOU and C.H. CHUANG Eigenvector sensitivity analysis of continuous beams with variable support locations	313
26.	S-M YANG Vibration and stability of structures with holonomic constraints	323
27.	J. MAGUIRE Structural dynamics, Finite Element analysis and ISO 9001	332
28.	M.J.H. FOX Finite Element analysis of coupled fluid/structure systems with free surfaces subjected to ground motions	340
	4. COMPOSITES	
2 9.	D. TURHAN and Y. CALAYIR Transient dynamic response of viscoelastic layered composites	353
30.	D.A. BOFILIOS and C.S. LYRINTZIS Random vibration of sandwich circular plates	363
31.	L-C SHIAU and J-T CHANG Flutter analysis of composite panels on many supports	377

5. SYSTEM IDENTIFICATION

32.	J.A. BRANDON Design issues for knowledge based systems for structural identification	389
33.	M.A. AL-HADID and J.R. WRIGHT A method for the estimation of mass and modal mass in the identification of nonlinear single and multi degree of freedom systems using the force-state mapping approach	399
34.	R.K. KAPANIA and J.B. NORMANN Parametric identification of nonlinear multiple degree- of-freedom structural dynamic systems	411
35.	M. WRIGHT and J.K. HAMMOND The convergence of Volterra series solutions of nonlinear differential equations	422
36.	J.E. MOTTERSHEAD and S. WEIXUN On the tuning of analytical models by using experimental vibration data	432
37.	N. KHALILI and J.K. HAMMOND The determination of reflection coefficients for dispersive systems using cepstral methods	444
38.	L. SHAW Examination of a functional series method for the identification of nonlinear systems	45 5
39.	Y.N. GONG Determination of dynamic loads and displacements of engineering structures under high velocity loading	465
	6. MODAL ANALYSIS	
40.	M.A. CUTCHINS An FFT analyzer housed in a 386 portable PC and its use in an educational environment	475
41.	O. TANRIKULU and H.N. ÖZGÜVEN A new method for the identification of non-linearities in vibrating structures	483
42.	J.E. COOPER and K. WORDEN Identification of the time varying parameters of a structural system	493

43.	B.J. DOBSON and H.G. LEE Structural modelling using sparse frequency domain data	504
44.	C.E. TEH and H.G.D. GOYDER Experimental study of nonlinear behaviour of impacting tubes	517
45.	M. PIRNER Dynamic tests of a cooling tower	531
46.	G. PAVIČ and L. GAVRIČ Effects of structural modifications on energy flow distribution in built-up structures	540
	7. PASSIVE CONTROL	
47 .	P-E ERIKSSON Shear properties of two viscoelastic damping materials - low-frequency vibration and creep	551
48.	S.O. OYADIJI, G.R. TOMLINSON Characterisation and application of the dynamic properties of elastomeric materials for vibration isolators	561
49.	C.H. KOH, W. BORTHWICK, G.R. TOMLINSON Theoretical and experimental studies of the influence of geometric shape on the vibration transmissibility of elastomeric elements	575
50.	J.L. HORNER and R.G. WHITE Vibrational power transmission through flexible sections in beam-like structures	586
51.	T. IGUSA and K. XU Vibration reduction characteristics of distributed tuned mass dampers	596
52.	H. YAMAGUCHI Damping characteristics of suspended cables in flexural oscillation	606
53.	QI FENG Application of stochastic optimum control theory to reduction of structural vibration under wind load	616

54.	J. SLAŠŤAN, M. HRVOL Identification of steel chimney dynamic behaviour using rocket engines	626
55.	U.E. DORKA and D. HEILAND Fast online earthquake simulation utilizing a novel PC supported measurement and control concept	636
	8. ACTIVE CONTROL	
56.	D.R. THOMAS, P.A. NELSON and S.J. ELLIOTT Theoretical studies of the active control of propeller induced cabin noise using secondary force inputs	649
57.	H.S. TZOU Damping control of "SMART" piezoelectric shell structures	659
58.	H.S. TZOU Neural sensation and actuation of shells using distributed piezoelectric transducers	669
59.	M.A. NORRIS, J.L. BERG and A. DAS Uniform damping control of the Astronautics Laboratory grid structure using reaction wheels: experiment and theory	679
60.	W. D'AMBROGIO, D.D. VESCOVO and A. SESTIERI Active control of flexible structures as an extension of structural modification concepts	690
61.	L. MAESTRELLO and F.W. GROSVELD Control of boundary layer transition location and plate vibration in the presence of an external acoustic field	702
	9. FATIGUE	
62.	C.K. CHIANG A Finite Element large deflection random response of a pipe containing fluid flow	715
63.	L. FRYBA Stress spectra and estimation of inspection intervals of steel railway bridges	726

10. NONLINEAR VIBRATION AND DYNAMICS

64.	Amplitude modulated dynamics in harmonically excited non-linear oscillations of rectangular plates with internal resonance	739
65.	R. BENAMAR, R.G. WHITE, M.M.K. BENNOUNA The effects of large vibration amplitudes on the fundamental mode shape of a fully clamped, symmetrically laminated, rectangular plate	749
66.	D.C. CHEN and A.A. SHABANA Effect of the coupling between bending and extension on the large displacement analysis of initially curved plates	761
67.	E. KARAESMEN, L. ILERI and N. AKKAS Chaotic dynamic analysis of viscoelastic shallow arches	<i>7</i> 71
68.	P.B. GONÇALVES Vibration characteristics and non-linear response of shallow spherical caps	781
69.	E. BUDAK and H. N. ÖZGÜVEN Harmonic vibration analysis of structures with local non- linearities and validity assessment of some linearization techniques	791
70.	C.Y. IP, Y.M. DESAI, P. YU, A.H. SHAH and N. POPPLEWELL An oscillator model for the galloping of an electrical transmission line	801
71.	C. MEI and D.Y. XUE Effect of temperature on nonlinear two-dimensional panel flutter using finite elements	811
72.	M.A. DE ROSA and C. FRANCIOSI Simple codimension two bifurcations in structural dynamics	822
73.	J.A. BRANDON, D. MACLEOD and O.N.L. ABRAHAM Modelling interface dynamics in orthopaedics	833

11. RANDOM VIBRATION OF NONLINEAR SYSTEMS

74.	C.W.S. TO A method of statistical nonlinearization of nonlinear systems	845
7 5.	M. GHAFORY-ASHTIANY and M. HOSSEINI The stochastic response of nonlinear systems to nonstationary earthquake excitations	855
7 6.	F. CASCIATI, P. VENINI and L. FARAVELLI Neglecting higher complex modes in nonlinear stochastic vibration	865
<i>7</i> 7.	R. SHEN The study of stochastic stability of grinding chatter	875
	Index of Contributors	885