Dr. Swarup Poria

Name : SWARUP PORIA

Date of Birth : 29th January, 1974

Nationality : Indian

Official Address : Department of Applied Mathematics,
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Educational Qualifications :

Degree / Examination	University /Institute	Year	Discipline	Division/ Class
Ph.D.	**Indian Statistical Institute (ISI JRF) (Jadavpur University)**	**2005**	**Fluid Mechanics**	
NET	**U.G.C.-C.S.I.R. (JRF)**	**1998**	**Mathematical Sciences**	
M.Sc.	**University of Calcutta (University College of Science, Rajabazar)**	**1997**	**Applied Mathematics**	**1st**
B.Sc.	**University of Calcutta (Scottish Church College)**	**1994**	**Mathematics (Hons.)**	**1st**

Thesis Title (Ph. D.) : Some Problems of Laminar and Turbulent Incompressible Fluid Flows

Research Experience :

Institutions	Designation	From	To	Total Period	Nature of Experience
Indian Statistical Institute, Kolkata	**Research Scholar**	**17-08-1998**	**25-02-2001**	**2 years and 6 months**	**Research and Teaching**
The Institute of Mathematical Sciences, Chennai	**IMSc Associate**	**01/01/06**	**31/12/08**	**3 years**	**Research**
Inter-University Centre for Astronomy and astrophysics (IUCAA), Pune.	**Visiting Associate**	**01/08/2017**	**31/07/2020**	**3years**	**Research**

Teaching Experience :

Institutions	Designation	From	To	Total Period	Nature of Experience
University of Calcutta	**Professor**	**10/05/2016**	**Till date**		**Teaching, Research and Evaluation**
University of Calcutta	**Associate Professor**	**10/05/13**	**09/05/2016**	**3 years**	**Teaching, Research and Evaluation**
University of Calcutta	**Reader in Applied Mathematics**	**10/05/10**	**09/05/13**	**3years**	**Teaching, Research and Evaluation**
University of Calcutta	**Senior Lecturer**	**25/11/08**	**09/05/10**	**1year 6months (approx)**	**Teaching, Research and Evaluation**
Midnapore College, Midnapore	**Lecturer in Mathematics**	**26/02/01**	**24/11/08**	**7 years and 9 months (approx).**	**Teaching and Evaluation**
The International Statistical Education Center, Kolkata	**Teacher (Research Scholar, PAMU, ISI)**	**17-08-1998**	**25-02-2001**	**2 years and 6 months**	**Teaching**

Research Interests:

- Nonlinear Dynamics and Chaos
- Mathematical Ecology
- EEG signal Analysis
- Modeling and Analysis of psychiatric disorders

9. Research Projects :

Sl. No.	Title	Agenency	Period	Grant/Amount Mobilized(Rs. in lakhs)
1.	Electro-physiological and Neuro-imaging Studies Including Mathematical Modeling	UGC Scheme of Centre with potential for excellence in Particular Area (CPEPA), Government of India	(Jan 2011- Mar 2019)	615 Rs. In Lakhs. Per Scientist 68.33 Lakhs
2.	Mathematical modeling and analysis of food webs	Science and Engineering Research Board, Government of India	3 years (January, 2020- December 22)	6 Lakhs

Collaborating Institutes

1. Institute of Mathematical Sciences (IMSc), Chennai
2. Indian Institute of Science, Bangalore
3. Indian Institute of Science Education & Research, Mohali
4. Indian Statistical Institute, Kolkata.

Sl. No.	Name of Student(s)	Title of the Dissertation(s)	Status [Awarded (with date)/Submitted(with date)/ongoing]
1.	Sanjib Kumar Kundu	Studies on some problems of non linear wave propagation in plasma	Awarded (05.10.2013) (V.B.U.)
2.	Banshidhar Sahoo	Impacts of additional food on the dynamics of predator-prey systems	Awarded (09.07.2015) (C.U.)
3.	Md. Ali Khan	Chaos control, chaos synchronization and its applications	Awarded (09.09.2015) (C.U.)
4.	Santinath Pal	Dynamics of coupled nonlinear systems	Awarded (29.03.2016) (C.U.)
5.	Dibyendu Biswas	Study of non linear growth processes through phenomenological approach	Awarded (09.03.2017) (J.U.)
6.	Barnali Pal	Study of nonlinear phenomenon through dynamical system approach with application in plasmas	Awarded(25.07.2017) (C.U.)
7.	Mayurakshi Nag	Synchronization and collective dynamical phenomenon in nonlinear systems	Awarded (16.01.2018) (C.U.)
8.	Santu Ghorai	Spatiotemporal patterns in predator-prey systems	Awarded (08.05.2018) (C.U.)
9.	Priyanka Chakraborty	Properties of coupled nonlinear systems with applications in EEG signal analysis	Awarded (06.08.2019) (C.U.)
10	Mousumi Roy	Analysis of Neuronal Models	Awarded (17.06.2022) (C.U.)
	Mrinal Kanti Pal	Analysis of Ecological Models	Submitted (August 2022)
11.	Aman Dhiman	A study on evolutionary game theory and its applications	Ongoing (C.U.)
12.	Sayantani Mondal	Study on dispersal effects on the dynamics of metapopulation models	Ongoing (C.U.)
13.	Abul Hossian	A study on evolutionary dynamics of biological games	Ongoing (C.U.)
15.	Swapan Kumar Jana	A study on nonsmooth ODEs	Ongoing (C.U.)
16.	Shyamal Kumar Mondal	Fluid Dynamics and Applications	Ongoing (C.U.)
17.	Kalyanashis Sahoo	Mathematical and Computational Analysis of Echological Models	Ongoing (C.U.)

	RESEARCH ACTVITIES				
(a)	Paper(s) Publication in SCI/Scopus Journal(s)				
Sl. No.	Title of the paper	Name of co-authors	Name of journal	Pages	Volume & year
1.	Effect of non-local grazing on dry-land vegetation dynamics	M K Pal	arXiv preprint arXiv : 2206.06691		2022
2.	Role of assortativity in predicting burst synchronization using echo state network	M Roy, A Senapati, A Mishra, C Hens	Physical Review E	064205	105(6),2022
3.	The role of harvesting in population control in the presence of correlated noise sources	S K Mandal	Physica Scripta		2022
4.	Diffusive instability in hyperbolic reaction-diffusion equation with different inertia	S Ghorai, N Bairagi	Chaos: An Interdisciplinary Journal of Nonlinear Science	013101	32(1),2022
5.	Non-linear behavior of electron acoustic wave dynamics in a magnetized plasma with non-thermal hot electrons	R Maity, B Sahu	Contributions to Plasma Physics	e202100040	61(7),2021
6.	Assortativity-induced explosive synchronization in a complex neuronal network	M Roy	Physical Review E	062307	103(6),2021
7.	Effects of non-local competition on Plankton-fish dynamics	M K Pal	Chaos: An Interdisciplinary Journal of Nonlinear Science	053108	31(5),2021
8.	Delay induced dynamical behaviors in a stochastic insect outbreak model in presence of Michaelis-Menten type harvesting	S K Mandal	Physica Scripta	055203	96(5),2021
9.	Chaos in positive ion–negative ion magnetized plasmas	S Ghosh, B Maity	Journal of Plasma Physics		86(6),2020
10.	Enhancement of synchronized chaotic state in a delay-coupled complex neuronal network	M Roy	Nonlinear Dynamics	745-758	102(2), 2020
11.	Effects of time delay on the synchronized states of globally coupled network	M Nag	Chaos: An Interdisciplinary Journal of Nonlinear Science	093122	30(9),2020
12.	Nonlinear dynamics of ion-acoustic waves in quantum plasmas with exchange-correlation effects	P Shome, B Sahu	Zeitschrift für Naturforschung		2020
13.	Complex dynamics of coupled map lattices under random asynchronous updating	M Nag	PhysicaScripta	045218	95(4), 2020
14.	Dispersal-induced pattern-forming instabilities in host–parasitoid metapopulations	S Ghorai, P Chakraborty, N Bairagi	Nonlinear Dynamics	1-14	3, 2020
15.	Inventory Modeling and Inventory Control Application	S Mondal, A Khatoon,	Supply Chain Intelligence	131-154	2020
16.	Li–Yorke Chaos in Globally Coupled Map Lattice with Delays	M Nag	International Journal of Bifurcation and Chaos	1950183	29(13), 2019

17.	Extreme multistablesynchronisation in coupled dynamical systems	P Chakraborty	Pramana	19	93(2), 2019
18.	Dynamics of predator–prey system with fading memory	B. Sahoo	Applied Mathematics and Computation	319-333	347, 2019
19.	Short Test of Mental Status in Detection of Mild Cognitive Impairment in India	SreerupaGhose, Tapalagna Das, Sanjukta Das	Indian Journal of Psychiatry	184	61(2) 2019
20.	Multistability in coupled different dimensional dynamical systems	Mohammad Ali Khan, Mayurakshi Nag	Pramana	89	91(6),2018
21.	Analysis of a harvested tritrophic food chain model in the presence of additional food for top predator	PrabirPanja, Shyamal Kumar Mondal	International Journal of Biomathematics	1850059-1 1850059-29	11(4), 2018
22.	Allee effect induced diversity in evolutionary dynamics	Aman Dhiman	Chaos, Solitons& Fractals	32-38	108,2018
23.	Neural oscillations in resting state EEG in ADHD children-A preliminary study.	P Saha, P Mukhopdhyay, P Chakraborty, C R Mukundan, S Sharma, P Ghosh, M Vijay, S Nath, S Ghosh	Journal of Indian Association for Child & Adolescent Mental Health	13(3)	2017
24.	Existence and Uniqueness of Solution to ODEs: Lipschitz Continuity	Aman Dhiman	Resonance – Journal of Science Education	491-507	22(5),2017
25.	Prey-predator dynamics with prey refuge providing additional food to predator	J Ghosh, B Sahoo	Chaos, Solitons& Fractals	110-119	96,2017
26.	Emergent impacts of quadratic mortality on pattern formation in a predator–prey system	S Ghorai	Nonlinear Dynamics	2715-2734	87 (4),2017
27.	Analysis of different growth mechanisms from phenomenological consideration	D Biswas, SN Patra	Journal of Interdisciplinary Mathematics	443-459	20 (2),2017
28.	Pattern formation in a system involving prey–predation, competition and commensalism	S Ghorai	Nonlinear Dynamics	1-18	2017
29.	Impacts of additional food on diffusion induced instabilities in a predator-prey system with mutually interfering predator	S Ghorai	Chaos, Solitons& Fractals	68-78	103,2017
30.	Complex dynamics of a particle in an oscillating potential field	B Pal, D Dutta	Pramana	32	89(2),2017
31.	The Decay of Isotropic Turbulence Preserving a General Type of Self Similarity	H P Mazumdar, S Ghorai	International Journal of Applied and Computational Mathematics	15-26	3(1),2017
32.	Analysis of different growth mechanisms from phenomenological consideration	D Biswas, S N Patra	Journal of Interdisciplinary Mathematics	443-459	20(2),2017
33.	Dyanamics of a Symbiotic Model with herd behaviour and strong Allee effect	P Sen, A Maiti, G P Samanta, P Shome	Neural, Parallel, and Scientific Computations	149-164	25,2017
34.	Design of multi-stable systems via partial synchronization	MA Khan, M Nag	Pramana	1-8	89(2),2017
35.	Phenomenological approach to describe oscillatory growth or decay in different dynamical systems	D Biswas, S N Patra	Indian Journal of Physics	1437-1444	90(12),2016

36.	Phenomenological approach to describe logistic growth and carrying capacity-dependent growth processes	D Biswas, SN Patra	Pramana	80	87 (5),2016
37.	Turing patterns induced by cross-diffusion in a predator-prey system in presence of habitat complexity	S Ghorai	Chaos, Solitons& Fractals	421-429	91, 2016
38.	Synchronization in a network of delay coupled maps with stochastically switching topologies	M Nag	Chaos, Solitons& Fractals	9-16	91,2016
39.	Chaotic behavior of collective ion dynamics in the presence of an external static magnetic field	S Ghosh	Physics of Plasmas	062315	23 (6),2016
40.	A generalized scheme for designing multistable continuous dynamical systems	S Pal, B Sahoo	Pramana	1183-1193	86 (6),2016
41.	Existence and uniqueness theorem for ODE: an overview	A Dhiman	arXiv preprint arXiv:1605.05317		2016
42.	Pattern formation and control of spatiotemporal chaos in a reaction diffusion prey–predator system supplying additional food	S Ghorai	Chaos, Solitons& Fractals	57-67	85, 2016
43.	Qualitative analysis of certain generalized classes of quadratic oscillator systems	B Bagchi, S Ghosh, B Pal	Journal of Mathematical Physics	022701	57(2),2016
44.	Nonlinear dynamics of ion acoustic waves in quantum pair-ion plasmas	B Sahu, B Pal, R Roychoudhury	Journal of Plasma Physics		81(5),2015
45.	Role of specific growth rate in the development of different growth processes	D Biswas, S N Patra	arXiv preprint arXiv:1509.07717		2015
46.	Oscillatory Growth: A Phenomenological View	D Biswas, S N Patra	arXiv preprint arXiv:1507.04833		2015
47.	Synchronized states and multi-stability in a random network of coupled discontinuous maps	M Nag	Chaos: An Interdisciplinary Journal of Nonlinear Science	083114	25(8),2015
48.	Bistable dynamics of an insect–pathogen model	N Mukherjee	Pramana	65-75	85(1),2015
49.	Effects of allochthonous inputs in the control of infectious disease of prey	B Sahoo	Chaos, Solitons& Fractals	1-19	75,2015
50.	Instability saturation by the oscillating two-stream instability in a weakly relativistic plasma	B Pal, B Sahu	Physics of Plasmas	042306	22 (4),2015
51.	Effects of additional food in a delayed predator–prey model	B Sahoo	Mathematical biosciences	62-73	261,2015
52.	Uncertain destination dynamics of delay coupled systems	S Pal	PhysicaScripta	035203	90 (3),2015
53.	Effects of additional food on an ecoepidemic model with time delay on infection	B Sahoo	Applied Mathematics and Computation	17-35	245,2015
54.	Chaos to order: Role of additional food to predator in a food chain model	B Sahoo	Differential Equations and Dynamical Systems	129-146	23(2),2015
55.	Properties of threshold coupled bistable maps	M Nag	PhysicaScripta	095205	89 (9),2015
56.	Effects of allochthonous resources in a three species food chain model with harvesting	B Sahoo	Differential Equations and Dynamical Systems	257-279	23(3),2015
57.	Evaluation of the intricacies of emotional facial expression of psychiatric patients using computational models	A Mondal, P Mukhopadhyay	Understanding facial expressions in communication	199-226	2015
58.	Phenomenological approach for describing environment dependent growths	D Biswas	arXiv preprint arXiv :1412.6939		2014
59.	Effects of supplying alternative food in a predator–prey model with harvesting	B Sahoo	Applied Mathematics and Computation	150-166	234,2014
60.	Effects of supplying alternative food in a predator–prey model with harvesting	B Sahoo	Applied Mathematics	150-166	234, 2014

			and Computation		
61.	Multistable behaviour of coupled Lorenz–Stenflo systems	S Pal, B Sahoo	PhysicaScripta		89 (4), 2014
62.	The chaos and control of a food chain model supplying additional food to top-predator	B Sahoo	Chaos, Solitons& Fractals	52-64	58, 2014
63.	Diseased prey predator model with general Holling type interactions	B Sahoo	Applied Mathematics and Computation	83-100	226, 2014
64.	Oscillatory coexistence of species in a food chain model with general holling interactions	B Sahoo	Differential Equations and Dynamical Systems	221-238	22(3),2014
65.	Comment on classification scheme for phenomenological universalities in growth problems in physics and other science	D Biswas	arXiv preprint arXiv :1412.6887		2014
66.	Projective synchronization of chaotic systems with bidirectional nonlinear coupling	M A Khan	Pramana	395-406	81(3),2013
67.	Identical synchronization of coupled new Lorenz-Like chaotic systems	P Karmokar, N Islam	International Journal of Pure and Applied Sciences and Technology	1	16(1),2013
68.	Disease control in a food chain model supplying alternative food	B Sahoo	Applied Mathematical Modelling	5653-5663	37(8),2013
69.	Reply to comment on nonlinear dynamics of a position-dependent mass-driven duffing-type oscillator	B Bagchi, S Das, S Ghosh	Journal of Physics A: Mathematical and Theoretical	368002	46(36),2013
70.	Spatiotemporal synchronization of coupled Ricker maps over a complex network	M A Khan, M Nag	Physica Scripta	015004	88(1),2013
71.	Dynamics of low dimensional model for weakly relativistic Zakharov equations for plasmas	B Sahu, B Pal, R Roychoudhury	Physics of Plasmas	052303	20(5),2013
72.	Generalized lag synchronization of delay coupled chaotic systems via transformations	S Pal, B Sahoo	Physica Scripta	045011	87(4),2013
73.	Nonlinear dynamics of a position-dependent mass-driven duffing-type oscillator	B Bagchi, S Das, S Ghosh	Journal of Physics A: Mathematical and Theoretical	032001	46(3),2012
74.	Solitonic, quasi-periodic and periodic pattern of electron acoustic waves plasma	B Sahu, R Roychoudhury	Astrophysics and Space Science	567-572	341(2),2012
75.	Quasi-periodic behavior of ion acoustic solitary waves in electron-ion quantum plasma	B Sahu, U N Ghosh, R Roychoudhury	arXiv preprint arXiv :1412.6887	052306	19(5),2012
76.	Generalized synchronization of unclear spin generator system and the application in secure communication	M A Khan	Journal of Dynamical Systems and Geometric Theories	53-59	10(1),2012
77.	Generalised anti-synchronization of different chaotic systems	M A Khan, S N Pal	International Journal of Applied Mechanics and Engineering	83	17(1),2012
78.	Multiple dynamical time-scales in networks with hierarchically nested modular organization	S Sinha	Pramana	833-842	77(5),2011
79.	Dynamics of a predictor-prey system with seasonal effects on additional food	B Sahoo	International Journal of Ecosystem	10-13	1(1),2011
80.	Three control strategies for unified chaotic system	M A Khan, A K Mondal	International Journal of Applied Mechanics andEngineering	597	16 (2),2011
81.	Under what kind of parametric fluctuations is spatiotemporal regularity the most robust?	M D Shrimali, S Sinha	Pramana	895-906	74(6),2010
82.	Synchronization threshold of a coupled n-dimensional time-delay system	A Tarai Poria, P Chatterjee	Chaos, Solitons & Fractals	1123-1124	41(3),2009
83.	Synchronization of bidirectionally	A Tarai, P Chatterjee	Chaos, Solutions &	190-197	41(1),2009

	coupled chaotic chen's system with delay		Fractals		
84.	Synchronization of generalized linearly bidirectionally coupled unified chaotic system	A Tarai, P Chatterjee	Chaos, Solutions & Fractals	885-892	40(2),2009
85.	A mathematical model for blood flow through straight artery of slightly non-circular cross-section	K N Dey, H P Mazumdar	International Journal of Applied Mechanics and Engineering	261-275	14(1),2009
86.	Surface waves on MHD tangential discontinuities: case for moderate to low plasma-β values	P S Joarder, S K Ghosh	Geophysical and Astrophysical Fluid Dynamics	89-108	103(1),2009
87.	Generalized lag-synchronization in chaotic systems	P Chatterjee, A Tarai	J Sci Tech Trophics	111-116	5,2009
88.	Synchronization of generalised linearly bidirectionally coupled unified chaotic system	P Chatterjee	Chaos, Solitons & Fractals	885-892	40(2),2009
89.	Constant rotation of two-qubit equally entangled pure states by local quantum operations	S Kunkri, P Parashar, S Ghosh	arXiv preprint arXiv :0811.0249		2008
90.	Circular hydraulic jump in generalized-Newtonian fluids	A Rai, B S Dandapat	arXiv preprint arXiv:0809.2231		2008
91.	Enhancement of spatiotemporal regularity in an optimal window of random coupling	M D Shrimali, S Sinha	Physical Review E	035201	78(3),2008
92.	Effect of magnetic field on Stokes flow due to an oscillating wall under the fluid slip condition	self	International Journal of Applied Mechanics and Engineering	847-853	13(3)2008
93.	Chaos synchronization	Ö Umut, R Patra	Journal of Dynamical Systems and Geometric Theories	13-18	5(1),2007
94.	Effects of hematocrit level on the oscillatory flow characteristic of blood in a stenosed artery	K N De, H P Mazumdar	International Journal of Applied Mechanics and Engineering	1103-1115	12(4),2007
95.	The linear generalized chaos synchronization and predictability	self	International Journal of Applied Mechanics and Engineering	879-885	12(3),2007
96.	A mathematical model for turbulent bubble plume	Self	International Journal of Applied Mechanics and Engineering	135-152	12(1),2007
97.	Energy spectrum of turbulence in the gas-solid flow	H P Mazumdar	Journal of Technical Physics	3-11	48(1),2007
98.	Adaptive synchronization of two coupled chaotic neuronal systems	A Tarai	Rev. Bull. Calcutta Math. Soc	53-60	15(1),2007
99.	Chaos Synchronization of Lü Dynamical System via Linear	Ömür Umut	Journal of Dynamical Systems and Geometric Theories	87-93	4(1),2006
100.	On the peristatic transport of a micropolar fluid	K N Dey, H P Mazumdar	Engineering Transactions	3-14	53(1),2005
101.	Some aspects of Rikitake system of dynamical equationss	K N De, H P Mazumdar	International Journal of Applied Mechanics and Engineering	87-96	8(1),2003
102.	Oscillating magnetohydrodynamic flow past a rigid plane wall	H P Mazumdar	Journal of Technical physics	343-350	43(3),2002
103.	Some effects of a transverse magnetic field on the flow of a viscous conducting fluid produced by an oscillating plane wall	C Mamaloukas, G Layek, H Mazumdar	Journal of Technical physics	397-405	42(4),2001

Books

Title of the Book	Publisher	ISBN	Year
SamayJekhaneAapekshik:BiseshAspekshikatarSahaj Path (in Bengali)	SetuPrakashani, 12/A, Sankar Ghosh Lane, Kolkata-700006	978-93-80677-90-3	2016

Book chapters

Title of the Book	Title of the Chapter	Publisher	Editors	ISBN	Year
Understanding Facial Expressions in Communication (Cross-cultural and Multidisciplinary Perspectives)	Evaluation of the Intricacies of Emotional Facial Expression of Psychiatric Patients Using Computational Models	Springer India	Manas K. Mandal And AvinashAwasthi	978-81-322-1933-0 and 978-81-322-1934-7(ebook)	2015

Future Plan

Stability analysis of synchronized states of dynamic random network of coupled nonlinear dynamical systems. Identification of extreme multistable dynamical systems of nature. Applications of dynamical system theory to study nonlinear waves in plasma and fluid systems. Mathematical modelling and analysis of ecological systems to preserve biodiversity and to control weather pollution. Condition for stability of pattern forming instability of biological and neuronal systems. Analysis of human brain EEG signals using the tools of dynamical system theory.

Invited Lectures and Chairmanships at National or International Conference/Seminar

Sl. No.	Title of the Lecture / Academic Session	Title of Conference / Seminar	Organized By	Whether International / National / State / Regional / College or University level
1.	Dynamical System (25^{th} and 31^{st} May,2018)	Teachers Enrichment workshop	Calcutta Mathematical Society	National
2.	Mathematical Modeling of Biological Systems (28^{th} March,2018)	National Seminar	Ramananda College, Bishnupur	National
3.	Mathematical Modeling and Analysis of ecological systems (28^{th} and 31^{st} March 2017)		Central University of Rajasthan	University
4.	Nonlinear Ordinary Differential Equations and Dynamical systems (8^{th} February,2017)	National Seminar	Vidyasagar College, Kolkata	National
5.	A pedestrian view of mathematical modeling		JIS University	State
6.	Solution of Wave Equation in 1,2, & 3 space dimensions (10-12^{th} August,2016)	Workshop on " Hyperbolic Partial Differential Equations (HPDE) and Conservation Laws (CL)"	Indian Institute of Science, Bangalore & Calcutta University	National level
7.	Existence and Uniqueness of solution of ODE: an overview (4^{th} May,2016)		Indian Statistical Institute, Kolkata	Institute level
8.	Emergent Collective Behaviours of Coupled Map Lattices (6^{th} January,2016)		Institute of Mathematical Sciences, Chennai	Institute level
9.	A Pedestrian View of Ordinary Differential Equation (1^{st} October,2015)		Sarat Centenary College	College level

Member

1. **Calcutta Mathematical Society (Life member)**
2. **Advanced center for Nonlinear & Complex Phenomena (Life member)**

Award

Young Scientist Award in Mathematics (Calcutta Mathematical Society 2002)