

Academic Portfolio of Andonowati



Name	Andonowati
Academic status	Associate Professor at Institut Teknologi Bandung, IND Co-founder of LabMath-Indonesia (LMI) http://www.labmath-indonesia.or.id
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FORMAL EDUCATION

- McGill University, Montreal, Canada, PhD (1995), **Mathematical Physics**
- McGill University, Montreal, Canada, MSc (1991), **Mathematical Physics**
- Univ. of Concordia, Montreal, Canada (1995/1996), Graduate studies in **Computer Science**
- Institut Teknologi Bandung, Indonesia, BSc (1986), **Mathematics Logic**

MEMBERSHIP OF PROFESSIONAL BODIES

- Member of Asian Fluid Mechanics Committee
- Board Member of Indonesian Applied Mathematical Society in The Netherlands
- Member of Society of Industrial and Applied Mathematics (SIAM)
- Member of Indonesian Mathematical Society

RESEARCH INITIATION and EXECUTION

Principle Investigator for the following Grants:

- Early Warning System, *RUPTURE-JBL*, 2006, under a possible negotiation
- Hibah Pasca, 2006-2008, *GeoMathematics*, awarded by DIKTI
- EU-SPF-Project, 2004/2005, *Academia-Company Partnership in Marine & Telecommunication Technology*, awarded by European Union
- RUTI, Indonesian International Joint Research Program, 2002-2005, *Wave Motion and Simulations*, awarded by Indonesian Minister of Research & Technology
- Hibah Bersaing, 2002-2005, *Effects of current on waves*, awarded by DIKTI
- The Third World Academy of Sciences, 2001, *Microwave Heating*, Selected to be one of ten (out of 1800 grant receivers over 17 years) best performance for a publication on the 20th Anniversary of TWAS
- Science & Technology Toray Research Grant, 2000, *Microwave Heating*, awarded by Toray

RESEARCH COLLABORATIONS

Co-Investigator for the following Research Grants:

- Co-applicant (with van Groesen), 2006, a joint research project on *Tsunami Modelling and Development of a New Boussinesq Code* funded by Mobility Program - KNAW
- Co-applicant (with van Groesen), 2005-2011, a joint research project on *Extreme Waves* funded by STW, Netherlands
- Scientific Manager, 2000-2005, *Extended Programmes in Applied Mathematics (EPAM)*: A bilateral programme Indonesia - Netherlands consisting 6 subprojects: Dynamical systems, Industrial engineering, Non-linear optics, Coastal engineering, Operation research, Mathematical statistics & probability

SUPERVISIONS

Supervising and co-supervising students

Ongoing supervision/co-supervision:

- Mashuri (S3, ITB, daily supervisor, Promotor: Dr. R. Saragih)
- Didit Aditya (S2, ITB, supervisor)

Finished supervision/co-supervision:

- Windarto (S2, ITB, supervisor, February 2007)
- Natanael Karyanto (Ph.D, UTwente-Netherlands, co-supervisor, finished Dec 2006)
- Wuryansari M.K (S3, ITB, daily supervisor, Promotor: Prof. M. Ansyar, finished May 2006),

- Marwan (S3, ITB, daily supervisor, Promotor: Prof. M. Ansyar, finished June 2006)
- Tri Sri Noor (MSc, ITB, supervisor, finished June 2006)
- Sugih Tjandra (MSc, ITB, supervisor, finished June 2006)
- Tan Wooi Nee (Ph.D, UTMalaysia, external supervisor, 2006)
- Helena Margaretha (PhD, UTwente-Netherlands, co-supervisor, 2005)
- Suryasatriya T. (Ph.D, ITB & Kaiserslautern-Germany, co-supervisor, 2005)
- W. Visser (MSc-UTwente, co-supervisor, 2004)
- Nuning Nuraeni (S2, ITB, supervisor, 2003)
- Edie Cayhono (Ph.D, UTwente & ITB sandwich , co-supervisor, 2002)
- S. Gallman (MSc-UTwente, 3 month training period at Garuda & ITB, co-supervisor)
- More than 15 BSc students; many studying abroad at the moment

RESEARCH DISSEMINATION

I. PUBLICATIONS

I. JOURNAL/PROCEEDINGS PUBLICATIONS (latest to oldest)

I.1. In Journals

- E. van Groesen & Andonowati, Variational derivation of KdV-type models for surface, *Physics Letters A* (2007), accepted
- Andonowati, N. Karyanto, E. van Groesen, Extreme waves phenomena in down-stream running modulated *Applied Mathematical Modeling* (2007) **31**, no.7, 1425-1443
- E. van Groesen & Andonowati, Extremal periodic wave profiles, *Natural Hazards and Earth System Sciences* (2007) **7**, 33-40
- Andonowati, W.M. Kusumawinahyu, E. van Groesen, A numerical study of the breaking of modulated waves generated at a wave maker, *Applied Ocean Research* (2006) **28**, 9-17
- E. van Groesen, Andonowati, Finite energy wave signals of extremal amplitude in the spatial NLS-dynamics, *Physics Letter A* (2006) **357**, 86-91
- E. van Groesen, Andonowati, N. Karyanto, Displaced Phase-Amplitude variables for waves of finite background, *Physics Letters A* (2006) **354**, 312-319
- Marwan, Toto Nusantara, Andonowati, Evolusi Spasial Gelombang Permukaan Multi Arah Berdasarkan Solusi Orde ke Tiga Persamaan KP, *Journal of Indonesian Mathematical Society MIHMI* (2006) **12**, no. 2
- H. Margaretha, F.P.H. van Beckum, Andonowati, E. van Groesen, A. Jamaludin, A.M. Wijaya, Iterative methods for efficient generation of wave fields in hydrodynamic laboratory, *Journal of Indonesian Mathematical Society MIHMI* (2006) **12**, no. 1
- E. van Groesen, A. Sopaheluwakan & Andonowati, Direct characterization of defect states and modes in defect grating structures, *JNOPM* (2004) **13**, 155-173
- Tan W.N., Andonowati, A low-dimensional model for the maximal amplification factor of bichromatic wave groups, *Proceedings ITB Series B*, (2004) **35 B**, No. 2
- Andonowati & E. van Groesen, Optical Pulse Deformation in Second Order Non-linear Media, *Journal of Nonlinear Optical Physics & Materials* (2003), **12**, n.2, pp. 221-234, ISSN 0218-1991
- Marwan & Andonowati, Deformation of propagating bi-chromatic signal and its effect to the maximum amplitude, *Journal of Mathematics & Science - FMIPA ITB* (2003) **8**, No. 2.
- Wuryansari M. Kusumawinahyu & Andonowati, Dynamics of the maximum of the envelopes of bi-chromatic wave packets, *Proceedings ITB, serie A*, ISSN 0125-9350 (2003) **34**
- Andonowati, E. van Groesen, Similarities between optical and surface water waves, *Special edition of MIHMI, Journal of Indonesian Mathematical Society* (2002) **8**, no. 3, pp. 1-8
- W. M. Kusumawinahyu, M. Irham, S. Prayitno, Andonowati, Dynamical positioning of a floating body with a case study of a floating barge, *Proceedings of ITB*, ISSN 0125-9350 (2002) **34**, no.1 , pp. 35-45
- M. Irham, Marwan, Andonowati, Effects of bottom stress on the run-up of waves, *Proceedings of ITB*, ISSN 0125-9350 (2002) **34**, no.1, pp. 47 - 60
- S. R. Pudjaprasetya, Andonowati, S. Subarinah, S. Prayitno, A Study of some solutions of Boussinesq equations, *Proceedings of ITB*, ISSN 0125-9350 (2002) **34**, no.1, pp. 299- 308

- K.K. Tam, Andonowati, M.T. Kiang, Sequential Eigenfunction Expansion for Certain Nonlinear Hammerstein Equations, *Canadian Applied Mathematics Quarterly* (2001) 9 no.2
- Andonowati and Daniel Chandra, The effect of spatial inhomogeneity of thermal conductivity on the formation of hot-spots, *J. Eng. Mathematics* (2000) 38, pp. 101 - 108
- E. Soewono, Andonowati, S.R. Pudjaprasetya, H.J. Wospakrik, F.P. Zen, Recent Development in Soliton: Theory and Applications, *Special Edition of Proceedings of ITB to celebrate the millennium*, ISSN 0125-9350 (2000) 32, no.2 pp. 417 - 453
- Hadi Susanto and Andonowati, Pembentukan bintik panas dalam pemanasan dengan gelombang mikro, *MIHMI, Journal of Indonesian Mathematical Society*, ISSN 0854 - 1380 (2000) 6, n3
- E. van Groesen, Andonowati, E. Soewono, *Non-linear effects in bi-chromatic surface waves*, *Proc. Estonian Acad. Sci., Mathematics and Physics* (1999) 48, pp. 206-229
- Andonowati, Agus Suryanto, and Salmawati, Evolution of waves above flat bottom using Boussinesq models, *MIHMI, Journal of Indonesian Mathematical Society*, ISSN 0854 - 1380 (1998) 4, n1, 1-15
- K. K. Tam and Andonowati, Numerical Study of a Problem in Combustion of a Porous Medium, *J. Austral. Math. Soc. Ser. B* (1997) 38, pp. 506-517
- Andonowati, Two-sided Shooting Method in Computation of Travelling Combustion Waves of a Solid Material, *J. Austral. Math. Soc. Ser. B* (1996) 38, pp.220-228
- K. K. Tam, Andonowati, and M. T. Kiang, Nonlinear Eigenfunction Expansion for a Problem in Microwave Heating, *Canadian Applied Math. Quarterly* (1996) 4, n3, pp.311-325
- K. K. Tam and Andonowati, Computation of Travelling Combustion Waves in Porous Medium, *Studies in Applied Mathematics* (1994) 91, pp.179-187
- Andonowati, An Application of the Interfacial Wave Theory of Solidification, *Canadian Journal of Physics* (1991) 69, n11, pp. 1326-1333

I.2. In Proceedings of Conferences/Seminars

- Marwan, N. Karyanto, Andonowati, Maximum Temporal Amplitude and Design of Experiments for Generation of Extreme, Proceedings of the Eleventh Asian Congress of Fluid Mechanics, 22-25 May 2006, Kuala Lumpur, Malaysia
- E. van Groesen, Andonowati & N. Karjanto, Deterministic aspects of Nonlinear Modulation Instability, Proceedings 'Rogue Waves 2004', Brest France, Jan. 2005 <http://www.ifremer.fr/web-com/stw2004/rw/status.html>
- Rene H.M. Huijsmans, Gert Klopman, Natanael Karjanto, Andonowati, Experiments on extreme waves generation using the Soliton on Finite Background, Proceedings 'Rogue Waves 2004', Brest France, Jan. 2005, <http://www.ifremer.fr/web-com/stw2004/rw/status.html>
- Andonowati, Marwan, E. van Groesen, *Maximal* temporal amplitude of generated wave groups with two or three frequencies, *Proceedings of 2nd ICPMR&DT (Singapore)* (2003) ISBN 981-04-9465-3, v2, pp. 111-106
- E. van Groesen, A. Sopaheluwakan & Andonowati, Full transmission modes and steady states in defect gratings, proceedings IEEE-LEOS meeting, UTwente, November 2003, pp. 273-276
- Andonowati, Wuryansari M.K., E. van Groesen, Steepness of extreme waves caused by wave focussing in the Benjamin-Feir instability regime, *Proceedings of International Symposium on Shallow Flows*, TUDelft, (2003), v1, pp. 205-210
- Andonowati, An optimal design of high dispersive reactors, *Proceedings of the 4th IMACS Symposium on Mathematical Modelling*, February 5 - 7, 2003 at TU Vienna, Austria, ISBN 3-91608-24-9, pp.1093-1098
- E. van Groesen, Andonowati & R. Huijsmans, MATHLAB, Mathematical support for hydrodynamic Laboratories, *Highlight Annual Report 2001 National Research School for Fluid Dynamics J.M. Burger Center* (2002) pp. 35-36
- Marwan, Andonowati, M. Irham, Edy Soewono, Evolution of Waves Based on Second Order Analytical Code of Improved KdV and Boussinesq Equations, *Proceedings of Seminar, Faculty of Mathematics & Natural Sciences, ITB*, ISBN 979-9299-30-6, (2000) pp 275-282

- W. Muharini K, Andonowati, Trisilowati, Marjono, Noor Hidayat, Dynamic Positioning of a Floating Body. , *Proceedings of Seminar, Faculty of Mathematics & Natural Sciences, ITB*, ISBN 979-9299-30-6 (2000) pp 267-275
- M. Irham , Andonowati, Marwan, Investigation on Wave Run Up Using 2-D Fully Non Linear Equations, *Proceedings of Seminar, Faculty of Mathematics & Natural Sciences, ITB*, ISBN 979-9299-30-6 (2000) pp 207 - 216
- Sudi Prayitno, Andonowati, Sri Subarinah, Sri Redjeki Pudjaprasetya, Edy Soewono, Efficient Numerical Code for an Improved Boussinesq Model, *Proceedings of Seminar, Faculty of Mathematics & Natural Sciences, ITB*, ISBN 979-9299-30-6 (2000) pp 258-268
- E. Cahyono, E. van Groesen, Andonowati, Predicting wave evolution in towing tanks, in the *Special Edition of Proceeding of ITB: Proceedings of Asia/Pacific Int. Congress on Eng. Comp. Modelling and Signal Processing*, Bandung ISSN 0125-9350 (1999)
- Andonowati and J. Grue, On the complete wave-drift damping problem for a ship model, In: *Computational Methods for Fluid-Structure Interactions*, Tapir Publishers, Norway, ISBN 82-519-1510-4 (1999) pp. 187- 196
- J.H. Westhuis and Andonowati, Applying the Finite Element Method in numerically solving the two dimensional free-surface water wave equations, *Proceedings 13th International Workshop on Water Waves and Floating Bodies*, The Netherlands, Editor: A.J. Hermans, 29 March - 1 April, 1998 pp. 171-174
- Jamaluddin, E. Cahyono, E. van Groesen, Andonowati, Wave Generation at LHI, *Proceedings of International Symposium on Advanced and Aerospace Sciences and Engineering in Indonesia*, August 31, 1998, pp. 209-218
- Andonowati, Solving Two-Dimensional Surface Waves Using Finite Element Method, *Proceedings of International Symposium on Advanced and Aerospace Science and Engineering in Indonesia*, August 31, 1998, pp. 369-374
- Andonowati, Microwave heating: critical dependence on data and parameters, In: *Differential Equations: Theory, Numerics and Applications*, Editors: E. van Groesen, E. Soewono, Kluwer Academic Publishers, 1997, pp. 189-200

I.3. Editorialship

- Andonowati & E. van Groesen, *EPAM General Meeting, Proceedings Institut Teknologi Bandung*, ISSN 0125-9350, 2002, Vol. 34, No. 2 & 3
- Edy Soewono & Andonowati, *Symposium on Wave Propagation, Proceedings Institut Teknologi Bandung SUPLEMEN*, ISSN 0125-9350, 2002, Vol. 34, No. 1
- Andonowati & B. van de Fliert, *Industrial Mathematics Week 2000, Proceedings Institut Teknologi Bandung SUPLEMEN*, ISSN 0125-9350, 2001, Vol. 33, No. 1

II. PARTICIPATION IN SCIENTIFIC EVENTS (Conferences, Symposium, Workshops)

II. 1. Chair of organizing committee of the following events (past app. 5 years)

- Symposium on Tsunami Modelling (10 August 2006)
- Workshop on Math & Numerical Modelling of Geophysical Flows (17-28 July 2006)
- Workshop on Tsunami Modelling & Development of a new Variational Boussinesq code (23-27 January 2006)
- International Conference on Applied Mathematics (August 2005)
- Seminar on Waves in Geosciences (4 May 2005)
- Seminar on Waves in Water, Optics, and Seismology (25 November 2004)
- Collaborative Colloquia #2 in Marine & Tell. Tech. (23-25 August 2004)
- Collaborative Colloquia #1 Marine & Tell. Tech (17-19 May 2004)
- Variational Methods in Science (15 - 20 July, 2002)
- EPAM General Meeting, Indonesia - Netherlands (1 - 4 July, 2002)
- Industrial Mathematics Projects (April - June, 2002)
- Workshop on Coding Theory & Cryptography (23 July - 3 August, 2001)
- Workshop & Symposium on Dynamical Systems (26 February - 8 March, 2001)
- Workshop & Symposium on Mathematical Support for Hydrodynamics Laboratories (27 August - 9 September, 2001)
- Symposium on Wave Propagation (12 - 13 September, 2001)

II.2. Speaker in selected scientific events

- *Extreme Waves*, 2nd IMT-GT 2006 RCMSA, Penang Malaysia, 13-15 June 2006 (Plenary Speaker)
- *Maximum Temporal Amplitude (MTA) and Design of Experiments for Generation of Extreme Waves*, the Eleventh Asian Congress of Fluid Mechanics (11ACFM), 22-25 May 2006, Kuala Lumpur, Malaysia (Marwan, N. Karyanto, Andonowati).
- *Maximum Temporal Amplitude and Designs of Experiments*, Open Science Meeting III, Jogjakarta, September 27-29, 2005 & ICAM05, Bandung - ITB, August 22-26, 2005
- *Dispersive effects in Tsunami Generation* (E. van Groesen, G. Klopman, Andonowati), The Indonesia Ocean Forum 2005 and 13th PAMS/JECSS Workshop, Bali, July 13-15, 2005
- *Maximal Temporal Amplitude (MTA) as a new concept for deterministic wave generation*, Rouge Waves 2004, Brest, French, October 20-22, 2004, (Andonowati & E. van Groesen)
- *Extreme wave generation in MARIN wave tank: Part 1: Deterministic waves based on Soliton of Finite background, Part 2: Results of Experiments in July 2004*, Rouge Waves 2004, Brest, French, October 20-22, 2004 (R. Huijsmans, N. Karjanto, Andonowati, Klopman & E. van Groesen)
- *On the Extreme Wave Generation in a Hydrodynamics Laboratory*, SIAM Conference on Nonlinear Waves and Coherent Structures, Florida, October 2-6, 2004
- *Deterministic Extreme Wave Generation* European Conference on Industrial and Applied Mathematics, Eindhoven, Netherlands, June 21-25, 2004
- *Modelling and Simulation in Sciences*, Dies Unibraw (Plenary Speaker) January 16, 2004
- *Maximal temporal amplitude of generated wave groups with two or three frequencies*, 2nd ICPMR&DT, Singapore, September 10-12, 2003 (with Marwan, E. van Groesen)
- Steepness of extreme waves caused by wave focussing in the Benjamin-Feir instability regime, *International Symposium on Shallow Flows*, TUDelft, June 16-18, 2003 (with Wuryansari M.K., E. van Groesen)
- *Signal deformation, maximum amplitude, and generation of extreme waves*, University of Philippine, Dilliman, March 17, 2003
- *On the deformation of Signals & their maximum amplitude*, University of Graz, Austria, February 3, 2003
- *An optimal design of high dispersive reactors*, the 4th IMACS Symposium on Mathematical Modelling, TU Vienna, Austria, February 5 - 7, 2003
- *On the deformation of Signals & their maximum amplitude*, Indian Institute of Science, December 16, 2002
- *Constructing a wave reflector to protect beaches? Instructional Workshop on Industrial Mathematics*, at Indian Institute of Technology of Bombay, ICIWM-2002, 2-6 December 2002 (with E. van Groesen)
- *On the microwave heating of a three layer slab with heat flux boundary conditions*, *International Conference on Industrial Mathematics*, at Indian Institute of Technology of Bombay, ICIWM-2002, 7-9 December 2002
- *Pengaruh gerak benda terapung terhadap profil gelombang*, Seminar MIPA III, Institut Teknologi Bandung, 21-22 Oktober 2002
- *One Week Lecture on Variational Methods in Science with Applications in Fluid Dynamics & Optics*, ITB, July 15-20, 2002 (with E. van Groesen)
- *Optical Pulse Deformation in Second Order Non-linear Media*, International Symposium on Modern Optics & Applications, ITB, July 3, 2002
- *Optics, Water : Some Differences and Similarities*, Indonesian Applied Mathematics Society in Netherlands (IAMS_N, Plenary Speaker), May 22, 2002, University of Twente