



SOUTH EAST ASIAN MATHEMATICAL SOCIETY

SEAMS SCHOOL PROPOSAL

Fixed Point Theory and Optimization

Chiang Mai University, Chiang Mai, Thailand

24 – 31 July 2017

Organized by

Department of Mathematics, Faculty of Science, Chiang Mai University

2017

SEAMS SCHOOL PROPOSAL

1. The proposed title, place and dates of the SEAMS School

Title of the SEAMS School	:	Fixed Point Theory and Optimization
Place	:	Chiang Mai University, Chiang Mai, Thailand
Dates	:	24 – 31 July 2017

2. Organizers (write the names, place of work, and email address, if you have more than two then add the necessary lines)

1. Name	:	Prof. Dr. Suthep Suantai
Institution	:	Chiang Mai University, Chiang Mai, Thailand
Email and Phone	:	suthep.s@cmu.ac.th
2. Name	:	Asist. Dr. Bancha Banyanak
Institution	:	Chiang Mai University, Chiang Mai, Thailand
Email and Phone	:	bpanyanak@yahoo.com

3. Short Description of the **Scientific Content**, the **Aim** of the proposed school and the potential **Impact** to the local academic system and/or society. (max 100 words)

Fixed point theory plays very important role in nonlinear analysis and applications. Most of important nonlinear problems in science and applied science reduce to solving a given equation or inequality which in turn may be reduced to finding the fixed points of a certain operator and fixed point theory plays an important role for solving solutions of those problems. There are mainly two important questions arising for solving those problems. The first one is the existence of solutions of those problems, and the second one is that how can we find or approximate those solutions of such problems. Many mathematicians are interested in studying and investigating those two problems. They can discover many new theorems which are very useful for solving many problems in science and applied science and economics.

Having in view that many of the most important nonlinear problems of science and applied science reduce to solving a given equation or inequality which in turn may be reduced to finding the fixed points of a certain operator and fixed point theory plays an important role in solving solutions of those problems. The metrical fixed point theory has developed significantly in the second part of the 20th century. There are big group of mathematicians who are interested in studying and investigating those two problems. They can discover many new theorems which are very useful for

solving many problems in science and applied science, optimization and economics.

The fixed point theory is concerned with finding conditions on the structure that the set must be endowed as well as on the properties of the operator, in order to obtain results on;

1. the existence (and uniqueness) of fixed points;
2. the structure of the fixed point sets;
3. the approximation of fixed points.

Construction of fixed point iteration processes of nonlinear mappings are an important subject in the theory of nonlinear mappings, and find application in a number of applied areas. Now, fixed point iteration processes for approximating fixed point of nonexpansive mappings, relatively nonexpansive mappings, hemi-relatively nonexpansive mappings, generalized nonexpansive mappings and maximal monotone operators in various space have been studied by many mathematicians. There are many new nonlinear mappings arising from various problems in science and applied science, optimization and economics. So the fixed point problems concerning those mappings are interesting for investigating. So we aim to investigate the existence problem, structure of fixed points set, and approximation method for finding fixed point of those new mappings. The mappings that we are interested in studying and have more applications are nonexpansive mappings, quasi-nonexpansive mappings, asymptotically nonexpansive mappings, quasi-asymptotically nonexpansive mappings, pseudocontractive mappings, quasi-pseudocontractive mappings, relatively nonexpansive mappings, hemi-relatively nonexpansive mappings, generalized nonexpansive mappings, maximal monotone operators, and other generalizations of these mappings.

There are many problems in economics, finance, transportation, network and structural analysis, elasticity, and optimization which can be solved by using equilibrium theory. The equilibrium problems cover many important problems such as minimization problems, variational inequality problems. In 199, Combettes and Hirstoaga first studied and constructed an iterative method for finding a solution of the equilibrium problem in a Hilbert space. They proved strong convergence theorem of their iterative method under some sufficient conditions. Their main results can be applied for solving variational inequality problem and they showed that there is a close relation between the fixed point problem and the equilibrium problem. So, many techniques in fixed point theory can be applied for the equilibrium problems. Many problems in science and applies science, physics, economics and others areas are more complicated. The solutions of those problems concern intersection of fixed point problems, variational inequality and equilibrium problems. So, the problem of finding a common solutions of those problems are very useful for applications and widely studied by many mathematicians.

Motivated by many previous works concerning the equilibrium problems, fixed point problems and other important problems in science, applied science and economics, our school are interested to provide a fundamental and useful basic concepts in fixed point theory and optimization theory for young researchers from each country member of SEAMS.

Objectives of the school.

1. To provide fundamental and basic knowledge in Fixed Point Theory and Optimization Theory for young researchers from each country member of SEAMS.
2. To discuss research directions in Fixed Point Theory and Optimization Theory among young researchers and expert professors in this area.
3. To build and develop young researchers and research network in the area of Fixed Point Theory and Optimization

4. The speakers of the school (name, address, email, male/female). Give the percentage of female speakers.

1. Prof. Dr. Yeol-Je Cho, Department of Mathematics Education, Gyeongsang National University, Jinju, 66 660-701, Korea. Email : yjcho@gnu.ac.kr, yjchomath@gmail.com, male.
2. Prof. Dr. Suthep Suantai, Department of Mathematics, Faculty of Science, Chiang Mai University, Chiang Mai, Thailand 50200, Email: suthep.s@cmu.ac.th, male
3. Assoc. Prof. Dr. Narin Petrot, Naresuan University, Phitsanulok, Thailand. Email : narinp@nu.ac.th, male
4. Assist. Prof. Dr. Thanasak Mouktonglang, Department of Mathematics, Faculty of Science, Chiang Mai University, Chiang Mai, Thailand 50200, Email: thanasak.m@cmu.ac.th, male .
5. Assist. Prof. Dr. Bancha Panyanak, Department of Mathematics, Faculty of Science, Chiang Mai University, Chiang Mai, Thailand 50200, Email: bpanyanak@yahoo.com , male .
6. Assist. Prof. Dr. Warunun Inthakon, Department of Mathematics, Faculty of Science, Chiang Mai University, Chiang Mai, Thailand 50200, Email: w_inthakon@hotmail.com , female .

5. Describe in a few lines the local institution related to this school, including the main academic program and its strengths in teaching program and research. Give also the internet site of the local institutions. Do you plan to have a website of this SEAMS school?

Chiang Mai University was the first institution of higher education in the north, and the first provincial university in Thailand. The department of mathematics is one of the famous department of the faculty of Science, Chiang Mai University. The department contains one program in Bachelor degree in Mathematics, three master programs in Mathematics, Applied Mathematics and Teaching Mathematics, and one Ph.D

program in Mathematics. There are several research areas in the department such as Fixed point theory and applications, Optimization, Algebra, Semigroup theory, Geometry, Probability and Graph theory. The fixed point group in the department is famous and the biggest one (7 persons). Prof. Suthep Suantai is one of the outstanding researcher in this area. He got many research awards from outside and inside the university. He is the chief editor of Thai Journal of Mathematics (see <http://thaijmath.in.cmu.ac.th>). Our website is <http://math.science.cmu.ac.th> . We plan to have a website of this SEAMS school if we get the permission to have a SAEAMS school on this topic.

6. Provide information on the number and distribution of expected participants. Give the percentage of female participants who will attend the school.

The total number of participants :	40 persons
Participants from Thailand :	20 persons
Participants from neighboring countries of SEAMS :	20 persons
Percentage of female participants :	50 %

7. Describe the objectives and the program of the proposed school, including the courses (max 5 courses), speakers (in each course), abstracts (8 lines for each course) and tentative schedule of the whole proposed school.

Objectives of the school.

1. To provide fundamental and basic knowledge in Fixed Point Theory and Optimization Theory for young researchers from each country member of SEAMS.
2. To discuss research directions in Fixed Point Theory and Optimization Theory among young researchers and expert professors in this area.
3. To build and develop young researchers and research network in the area of Fixed Point Theory and Optimization

The school consists of two courses.

- (1) Fixed point theory and applications
- (2) Optimization theory

Course description : (1) Fixed point theory and applications

Introduction to metric and Banach spaces, Fixed point theory in metric spaces, fixed point theory in Hilbert spaces, Fixed point theory in Banach spaces, Approximation methods of fixed points and rate of convergence.

Course description : (2) Optimization theory

Elements of calculus, Basic of set-constrained and unconstrained optimization, One-Dimensional search methods, Gradient methods, Newton's methods, Conjugate direction methods, Quasi-Newton methods, Solving linear equations, optimization and

Neural networks, Global search algorithms, Nonlinear constrained optimization.

Program of the school

24 July 2017	Topics /Activity	Lecturer
7.30 – 8.30	Registration	
8.30 - 8.45	Opening Remark	Dean of Science faculty
8.45 – 10.00	Introduction to metric spaces and Banach spaces	Prof. Suthep Suantai
10.00 – 10.15	Coffee break	
10.15 - 12.00	Fixed point theory in metric spaces (I)	Prof. Yeol Je Cho
12.00 – 13.00	Lunch	
13.00 – 14.30	Fixed point theory in metric spaces (II)	Prof. Yeol Je Cho
14.30 – 14.45	Coffee break	
14.45 – 16.00	Fixed point theory in metric spaces (III)	Prof. Suthep Suantai

25 July 2017	Topics /Activity	Lecturer
8.30 - 10.00	Fixed point theory in Hilbert spaces (I)	Prof. Bancha Panyanak
10.00 – 10.15	Coffee break	
10.15 - 12.00	Fixed point theory in Hilbert spaces (II)	Prof. Bancha Panyanak
12.00 – 13.00	Lunch	
13.00 – 14.30	Fixed point theory in Banach spaces (I)	Prof. Yeol Je Cho
14.30 – 14.45	Coffee break	
14.45 – 16.00	Fixed point theory in Banach spaces (II)	Prof. Warunun Inthakon

26 July 2017	Topics /Activity	Lecturer
8.30 - 10.00	Approximation methods for fixed points (I)	Prof. Yeol Je Cho
10.00 – 10.15	Coffee break	
10.15 - 12.00	Approximation methods for fixed points (II)	Prof. Suthep Suantai
12.00 – 13.00	Lunch	
13.00 – 14.30	Approximation methods for fixed points (III)	Prof. Bancha Panyanak
14.30 – 14.45	Coffee break	
14.45 – 16.00	Rate of convergence	Prof. Suthep Suantai

27 July 2017	Topics /Activity	Lecturer
8.30 - 10.00	Discussion on research problems in fixed point theory (I)	Prof. Yeol Je Cho
10.00 – 10.15	Coffee break	
10.15 - 12.00	Discussion on research problems in fixed point theory (II)	Prof. Suthep Suantai / Prof. Bancha Banyanak
12.00 – 13.00	Lunch	
13.00 – 18.00	Excursion	Doi Suthep / Old City tour

28 July 2017	Topics /Activity	Lecturer
8.30 - 10.00	Elements of calculus	Prof. Narin Petrot
10.00 – 10.15	Coffee break	
10.15 - 12.00	Basic of set-constrained and unconstrained optimization	Prof. Narin Petrot
12.00 – 13.00	Lunch	
13.00 – 14.30	One-Dimensional search methods	Prof. Narin Petrot
14.30 – 14.45	Coffee break	
14.45 – 16.00	Gradient methods	Prof. Thanasak Mouktonglang

29 July 2017	Topics /Activity	Lecturer
8.30 - 10.00	Newton's methods	Prof. Thanasak Mouktonglang
10.00 – 10.15	Coffee break	
10.15 - 12.00	Conjugate direction methods	Prof. Narin Petrot
12.00 – 13.00	Lunch	
13.00 – 14.30	Quasi-Newton methods	Prof. Narin Petrot
14.30 – 14.45	Coffee break	
14.45 – 16.00	Solving linear equations	Prof. Narin Petrot

30 July 2017	Topics /Activity	Lecturer
8.30 - 10.00	Unconstrained optimization and Neural networks	Prof. Narin Petrot
10.00 – 10.15	Coffee break	
10.15 - 12.00	Global search algorithms	Prof. Narin Petrot
12.00 – 13.00	Lunch	
13.00 – 14.30	Nonlinear constrained optimization (I)	Prof. Thanasak Mouktonglang
14.30 – 14.45	Coffee break	
14.45 – 16.00	Nonlinear constrained optimization (II)	Prof. Thanasak Mouktonglang

31 July 2017	Topics /Activity	Lecturer
8.30 - 10.00	Discussion on research problems in fixed point theory (III)	Prof. Yeol Je Cho/ Prof. Suthep Suantai/ Prof. Bancha Panyanak
10.00 – 10.15	Coffee break	
10.15 - 12.00	Discussion on Research problems in optimization (I)	Prof. Yeol Je Cho
12.00 – 13.00	Lunch	
13.00 – 14.30	Discussion on research problems in Optimization (III)	Prof. Narin Petrot
14.30 – 14.45	Coffee break	
14.45 – 16.00	Discussion on research problems in Optimization (III)	Prof. Thanasak Mouktonglang
16.00 – 16.15	Closing remark	Head of mathematics department

8. Provide information about provisional budget and the expected funding.

Provisional Budget

No	Item	Details	Sources		Total (EUR)
			CIMPA (EUR)	Others (Thai baht)	
1	Tickets				
	Overseas Participants		2,000		2,000
	Speakers (overseas and local)		800		800
2	Accommodation				
	Participants		1,000		1,000
	Speakers		600	10,000	863
3	Food Expenses		300	20,000	826
4	Local Transport			10,000	263
5	Supplies and Printings			10,000	263
6	Living Expenses for overseas participants		300		300
7	Social program (Exursion)			10,000	263
	TOTAL		5,000 (EUR)	60,000 (Baht)	6,578 (EUR)

Note: At least 2/3 of **CIMPA support** can be used for travel, accommodation and/or living expenses of young researchers (less than 38 or recent PhD) from neighbouring countries of the activity; at most 1/3 at most can be used for lecturers (economy class travel and/or standard living expenses).

CIMPA support cannot be used for: reimbursements for participants living in developed countries (even if their nationality is from a developing country); registration fees; proceedings; organizational expenses.

Expected Funding

No	Item	Confirmed (Yes/Not Yet)	Total
1	CIMPA	5,000 (EUR) , Not Yet	5,000
2	University/Institution Host	60,000 (baht), Yes	60,000 baht
3	...		
4		
	TOTAL	6,578 (EUR)	

9. Provide CVs for the organizers (**2 pages max for each person**, including current publications).



Professor Dr. Suthep Suantai

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EDUCATIONAL BACKGROUND

- 1979-1983 B.Sc (Mathematics), Srinakkarin University (Pitsanulok), Thailand
- 1983-1985 MSc (Mathematics), Chulalongkorn University, Bangkok, Thailand
- 1990-1993 Ph.D (Mathematics), Chulalongkorn University, Bangkok, Thailand

FIELDS OF SPECIALLIZATION : Banach Spaces Theory , Geometry of Banach Spaces, Fixed Point Theory and Applications, Optimization

An editor of the journals:

- (1) The Chief Editor of Thai Journal of Mathematics.
- (2) Frontiers in Applied Mathematics and Statistics (Fixed Point Theory)
- (3) Chiang Mai Journal of Science

AWARDS

Name of Award	Organization	Year
Outstanding Researcher in Physical Science	National Research Council	2014
Research Award	Thailand Research Fund	2014
Outstanding Teacher for Science and Technology	Thailand University Senate	2009
Outstanding Researcher for Science and Technology	Chiang Mai University	2008

PUBLICATIONS (2015 - 2016)

1. Sridarat, Phiku, Suthep Suantai, CARISTI FIXED POINT THEOREM IN METRIC SPACES WITH A GRAPH AND ITS APPLICATIONS, JOURNAL OF NONLINEAR AND CONVEX ANALYSIS , 2016, Volume: 17 Issue: 7 Special Issue: SI Pages: 1417-1428
2. Suanoom, Cholatis; Klin-eam, Chakkrid, Suthep Suantai, Dislocated quasi-b-metric spaces and fixed point theorems for cyclic weakly contractions, 2016, JOURNAL OF NONLINEAR SCIENCES AND APPLICATIONS Volume: 9 Issue: 5 Pages: 2779-2788.
3. Suthep Suantai , Charoensawan, Phakdi; Lampert, Tatjana Aleksic, Common coupled fixed point theorems for theta-psi-contraction mappings endowed with a directed graph, , 2015, Article Number: 224.
4. Cheawchan, Kanyarat; Suthep Suantai, Kangtunyakarn, Atid, A new technique for convergence theorem of fixed point problem of quasi-nonexpansive mapping, FIXED POINT THEORY AND APPLICATIONS, 2015, Article Number: 216.
5. Tiammee, Jukrapong; Kaewkhao, Attapol, Suthep Suantai, On Browder's convergence theorem and Halpern iteration process for G-nonexpansive mappings in Hilbert spaces endowed with graphs, FIXED POINT THEORY AND APPLICATIONS, 2015 Article Number: 187.
6. Hanjing, Adisak; Suthep Suantai, Coincidence point and fixed point theorems for a new type of G-contraction multivalued mappings on a metric space endowed with a graph, FIXED POINT THEORY AND APPLICATIONS, 2015 Article Number: 171.
7. Kaewkhao, Attapol; Panyanak, Bancha; Suthep Suantai, Viscosity iteration method in CAT(0) spaces without the nice projection property, JOURNAL OF INEQUALITIES AND APPLICATIONS , 2015, Article Number: 278 .
8. Suthep Suantai; Petrot, Narin; Saksirikun, Warut, Fuzzy fixed point theorems on the complete fuzzy spaces under supremum metric, FIXED POINT THEORY AND APPLICATIONS, 2015 Article Number: 167.
9. Yukunthorn, Weera; Suthep Suantai ; Ntouyas, Sotiris K., Boundary value problems for impulsive multi-order Hadamard fractional differential equations, BOUNDARY VALUE PROBLEMS , 2015, Article Number: 148.
10. Klanarong, Chalongchai , Suthep Suantai , Coincidence point theorems for some multi-valued mappings in complete metric spaces endowed with a graph, FIXED POINT THEORY AND APPLICATIONS, 2015, Article Number: 129.
11. Panyanak, Bancha, Suthep Suantai , Viscosity approximation methods for multivalued nonexpansive mappings in geodesic spaces, FIXED POINT THEORY AND APPLICATIONS , 2015, Article Number: 114.

12. Cholamjiak, Prasit; Cholamjiak, Watcharaporn; Suthep Suantai , A modified regularization method for finding zeros of monotone operators in Hilbert spaces, JOURNAL OF INEQUALITIES AND APPLICATIONS , 2015, Article Number: 220
13. Suthep Suantai, Ntouyas, Sotiris K.; Asawasamrit, Suphawat , A coupled system of fractional q-integro-difference equations with nonlocal fractional q-integral boundary conditions, ADVANCES IN DIFFERENCE EQUATIONS , 2015, Article Number: 124
14. Suthep Suantai ; Phuengrattana, Withun, A new iterative process for a hybrid pair of generalized asymptotically nonexpansive single-valued and generalized nonexpansive multi-valued mappings in Banach spaces, FIXED POINT THEORY AND APPLICATIONS, 2015, Article Number: 58.
15. Cholamjiak, Watcharaporn; Cholamjiak, Prasit; Suthep Suantai , Convergence of iterative schemes for solving fixed point problems for multi-valued nonself mappings and equilibrium problems, JOURNAL OF NONLINEAR SCIENCES AND APPLICATIONS , 2015, Volume: 8 Issue: 6 Special Issue: SI Pages:1245-1256.
16. Tiammee, Jukrapong; Suthep Suantai, COINCIDENCE POINT THEOREMS FOR MULTI-VALUED MAPPINGS OF REICH-TYPE ON METRIC SPACES ENDOWED WITH A GRAPH, 2015, Volume: 16 Issue: 2 Special Issue: SI Pages: 365-373.
17. Tiammee, Jukrapong; Suantai, Suthep, Fixed point theorems for monotone multi-valued mappings in partially ordered metric spaces, FIXED POINT THEORY AND APPLICATIONS, 2014, Article Number: 110.
18. Suantai, Suthep; Cholamjiak, Prasit, Algorithms for solving generalized equilibrium problems and fixed points of nonexpansive semigroups in Hilbert spaces, OPTIMIZATION, 2014, Volume: 63 Issue: 5 Pages: 799-815.
19. Tiammee, Jukrapong; Suantai, Suthep, Coincidence point theorems for graph-preserving multi-valued mappings, , 2014, Article Number: 70.
20. Phuengrattana, Withun; Suantai, Suthep, Existence and convergence theorems for generalized hybrid mappings in uniformly convex metric spaces, NDIAN JOURNAL OF PURE & APPLIED MATHEMATICS Volume: 45 Issue: 1 Pages: 121-136.
21. Phuengrattana, Withun; Suantai, Suthep; Wattanawitoon, Kriengsak, WEAK AND STRONG CONVERGENCE THEOREMS OF PROXIMAL POINT ALGORITHM FOR SOLVING GENERALIZED MIXED EQUILIBRIUM PROBLEMS AND FINDING ZEROES OF MAXIMAL MONOTONE OPERATORS IN BANACH SPACES, JOURNAL OF COMPUTATIONAL ANALYSIS AND APPLICATIONS ,2014, Volume: 16 Issue: 2 Pages: 264-281.
22. Bunyawat, A.; Suantai, S., COMMON FIXED POINTS OF A FINITE FAMILY OF MULTIVALUED QUASI-NONEXPANSIVE MAPPINGS IN UNIFORMLY CONVEX BANACH SPACES, BULLETIN OF THE IRANIAN MATHEMATICAL SOCIETY , 2013, Volume: 39 Issue: 6 Pages: 1125-1135.

CURRICULUM VITAE

ASSIST. PROF. DR. BANCHA PANYANAK

PERSONAL DATA

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CHIANG MAI, THAILAND 50200, TEL. (66)53 943327 EXT 134 , FAX. (66)53 892280
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EDUCATION

1998: B. ED. IN MATHEMATICS, NARESUAN UNIVERSITY.

2006: PH.D. SC. IN MATHEMATICS, CHIANG MAI UNIVERSITY.

SCHOLARSHIP

1. CAPITAL TEACHERS OF MATHEMATICS, 1998–2001
2. STAFF DEVELOPMENT FUND, 2002–2007
3. THE ROYAL GOLDEN JUBILEE PH.D PROGRAM, 2003–2006

HONOR AWARDS

THAI FRONTIER AUTHOR AWARD 2015 (BY THOMSON REUTERS AND THE COMMISSION ON HIGHER EDUCATION)

PUBLICATIONS

- [1] B. [PANYANAK](#), [S. SUANTAL](#). VISCOSITY APPROXIMATION METHODS FOR MULTIVALUED NONEXPANSIVE MAPPINGS IN GEODESIC SPACES. *FIXED POINT THEORY APPL.* 2015, 2015:114, 14 pp.
- [2] B. [PANYANAK](#). ENDPOINTS OF MULTIVALUED NONEXPANSIVE MAPPINGS IN GEODESIC SPACES. *FIXED POINT THEORY APPL.* 2015, 2015:147, 11 pp.
- [3] A. [KAEWKHAO](#), [B. PANYANAK](#), [S. SUANTAL](#). VISCOSITY ITERATION METHOD IN $CAT(0)$ SPACES WITHOUT THE NICE PROJECTION PROPERTY. *J. INEQUAL. APPL.* 2015, 2015:278, 9 pp.
- [4] B. [PANYANAK](#). ON AN OPEN PROBLEM OF KYUNG SOO KIM. *FIXED POINT THEORY APPL.* 2015, 2015:186, 12 pp.
- [5] K. SAMANMIT AND B. PANYANAK, REMARKS ON MULTIVALUED QUASI-NONEXPANSIVE MAPPINGS IN R -TREES, *JOURNAL OF NONLINEAR AND CONVEX ANALYSIS*, [15 \(2014\), NO. 6](#), 1181–1191.
- [6] B. [PANYANAK](#). ON TOTAL ASYMPTOTICALLY NONEXPANSIVE MAPPINGS IN $CAT(K)$ SPACES. *J. INEQUAL. APPL.* 2014, 2014:336, 13 pp.
- [7] B. [PANYANAK](#). ON THE ISHIKAWA ITERATION PROCESSES FOR MULTIVALUED MAPPING SOME $CAT(K)$ SPACES. *FIXED POINT THEORY APPL.* 2014, 2014:1, 9 pp. [4](#)

- [8] B. [NANJARAS](#), [B. PANYANAK](#), GENERALIZED HYBRID MAPPINGS ON $CAT(K)$ SPACES. *J. INEQUAL. APPL.* 2014, 2014:403, 12 pp.
- [9] **B. PANYANAK** AND P. PASOM, COMMON FIXED POINTS FOR ASYMPTOTIC POINTWISE NONEXPANSIVE MAPPINGS, *FIXED POINT THEORY*, 2013 ; 14 (1) : 151–160.
- [10] **B. PANYANAK**, THE HOMOTOPIC INVARIANCE FOR FIXED POINTS OF SET-VALUED MAPPINGS IN BANACH SPACES, *INTER. J. MATH. ANAL.*, 2013 ; 7 (47) : 2341–2348.
- [10] W. [LAOWANG](#), [B. PANYANAK](#), A NOTE ON COMMON FIXED POINT RESULTS IN UNIFORMLY CONVEX HYPERBOLIC SPACES. *J. MATH.* 2013, ART. ID 503731, 5 pp.
- [12] S. DHOMPONGSA, A. KAEWKHAO, **B. PANYANAK**, ON KIRK'S STRONG CONVERGENCE THEOREM FOR MULTIVALUED NONEXPANSIVE MAPPINGS ON $CAT(0)$ SPACES, *NONLINEAR ANALYSIS : TMA*, 2012 ; 75 (2) : 459–468.
- [13] P. PASOM AND **B. PANYANAK**, COMMON FIXED POINTS FOR ASYMPTOTIC POINTWISE NONEXPANSIVE MAPPINGS IN METRIC AND BANACH SPACES, *JOURNAL OF APPLIED MATHEMATICS*, 2012 ; ARTICLE ID 327434 : 1–17.
- [14] S. DHOMPONGSA, A. KAEWKHAO, **B. PANYANAK**, BROWDER'S CONVERGENCE THEOREM FOR MULTIVALUED MAPPINGS WITHOUT ENDPOINT CONDITION, *TOPOLOGY AND ITS APPLICATIONS*, 2012 ; 159 (10–11) : 2757–2763.
- [15] B. NANJARAS AND **B. PANYANAK**, AN APPROXIMATION METHOD FOR COMMON FIXED POINTS OF A FINITE FAMILY OF ASYMPTOTIC POINTWISE NONEXPANSIVE MAPPINGS, *FIXED POINT THEORY AND APPLICATIONS*, 2012 ; 108 : 1–13.
- [16] K. SAMANMIT AND **B. PANYANAK**, ON MULTIVALUED NONEXPANSIVE MAPPINGS IN R -TREES, *JOURNAL OF APPLIED MATHEMATICS*, 2012 ; ARTICLE ID 629149 : 1–13.
- [17] T. LAOKUL AND **B. PANYANAK**, ON THE ISHIKAWA ITERATION PROCESS IN $CAT(0)$ SPACES, *BULL. IRANIAN MATH. SOC.*, 2011 ; 37 (4) : 185–197.
- [18] A. KAEWCHAROEN AND **B. PANYANAK**, FIXED POINT THEOREMS FOR SOME GENERALIZED MULTIVALUED NONEXPANSIVE MAPPINGS, *NONLINEAR ANALYSIS : TMA*, 2011 ; 74(6) : 5578–5584.
- [19] A. CUNTAVEPANIT AND **B. PANYANAK**, STRONG CONVERGENCE OF MODIFIED HALPERN ITERATIONS IN $CAT(0)$ SPACES, *FIXED POINT THEORY AND APPLICATIONS*, 2011 ; ARTICLE ID 869458, 11 PAGES.
- [20] **B. PANYANAK** AND A. CUNTAVEPANIT, A GENERALIZATION OF SUZUKI'S LEMMA, *ABSTRACT AND APPLIED ANALYSIS*, 2011 ; ARTICLE ID 824718, 14 PAGES.