Notices from the ISMS
September 2005

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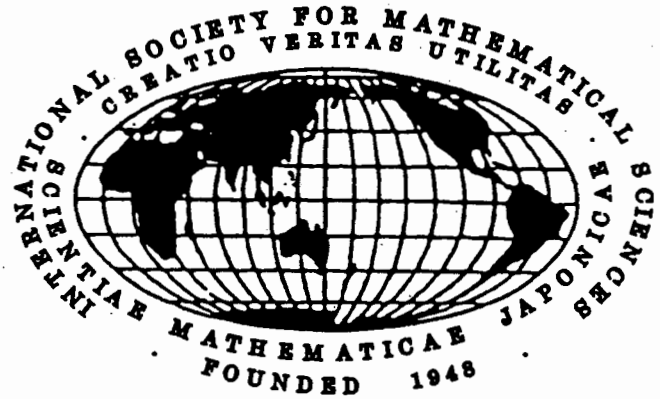

For the Welfare of the Humankind

Promoting Mathematical Sciences

SET-THEORETIC ASPECTS OF FIXED POINT THEORY OF MULTIVALUED OPERATORS: OPEN PROBLEMS

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1. Introduction

Let X be a nonempty set. Then we denote

$\mathcal{P}(X) := \{Y | Y \text{ is a subset of } X\}$,

$P(X) := \{Y \in \mathcal{P}(X) | Y \text{ is nonempty}\}$.

By definition an operator $T : X \to \mathcal{P}(X)$ is a multivalued operator from X to X and we shall also use the notation $T : X \multimap X$. If $T : X \multimap X$ is a multivalued operator then

$T^1 := T$, $T^2 := T \circ T$, $T^{n+1} = T \circ T^n$, $n \in \mathbb{N}^* := \{1, 2, \dots\}$;

$F_T := \{x \in X | x \in T(x)\}$ denotes the fixed point set of T;

$(SF)_T := \{x \in X | T(x) = \{x\}\}$ denotes the strict fixed point set of T;

$P_T := \bigcup_{n \in \mathbb{N}^*} F_{T^n}$ denotes the periodic point set of T;

$(SP)_T := \bigcup_{n \in \mathbb{N}^*} (SF)_{T^n}$ denotes the strict periodic point set of T.

One of the problems of the fixed point theory of multivalued operators is to give conditions in which we have:

(a) $F_T \neq \emptyset$; (b) $(SF)_T \neq \emptyset$; (c) $P_T \neq \emptyset$; (d) $(SP)_T \neq \emptyset$.

See, for example: N.S. Papageorgiou [7], A. Granas and J. Dugundji [6], L. Górniewicz [5], W.A. Kirk and B. Sims [11], A. Petruşel [17] and I.A. Rus [22]. See also S.B. Nadler [15], J.R. Jachymski [9], M.A. Khamsi and D. Misane [10], A. Petruşel [16] and [18], I.A. Rus [21], I.A. Rus, A. Petruşel and G. Petruşel [25], R.E. Smithson [27],...).

The notion "strict fixed point" was introduced in I.A. Rus [20]. See also I.A. Rus [24] and the references therein (S. Reich (1972), Lj.B. Ćirić (1974), K. Iseki (1974), S. Dancs, M. Hegedüs and P. Medvegyev (1983), H.W. Corley (1986), T. Hicks and B.E. Rhoades (1992), A. Muntean (2002)).

Let X be a nonempty set and $T : X \to P(X)$ a multivalued operator.

The aim of this paper is to present the following problems:

Problem 1. In which conditions we have that

$$(SF)_T \neq \emptyset \Rightarrow F_T = (SF)_T = \{x^*\}?$$

Problem 2. In which conditions we have that

$$(F_T = (SF)_T \neq \emptyset?$$

Problem 3. In which conditions

$$F_T = P_T?$$

Problem 4. In which conditions

$$(SF)_T = (SP)_T?$$

Problem 5. In which conditions

$$T(F_T) = F_T?$$

2. Examples and contraexamples

Example 1. Let $T : \mathbb{R} \multimap \mathbb{R}$ be defined by $T(x) := \{x, x+1\}$, $x \in \mathbb{R}$. In this case

$$F_T = F_{T^n},\ (SF)_{T^n} = \emptyset,\ \forall\, n \in \mathbb{N}^*.$$

Example 2. In the case of $T : \mathbb{R} \multimap \mathbb{R}$, $T(x) := \left[-\frac{x}{2}, \frac{x}{2}\right]$, $x \in \mathbb{R}$, we have

$$F_T = (SF)_T = F_{T^n} = (SF)_{T^n} = \{0\},\ \forall\, n \in \mathbb{N}^*$$

and

$$T(F_T) = F_T,\ T(P_T) = P_T.$$

Example 3. $T : \mathbb{R} \multimap \mathbb{R}$, $T(x) := \{x^2, x^3\}$. In this case

$$F_T = F_{T^n} = \{0, 1, -1\},\ (SF)_T = (SF)_{T^n} = \{0, 1\},\ \forall\, n \in \mathbb{N}^*$$

and $T(F_T) = F_T$.

Example 4. Let X be a nonempty set and $Y \subset X$ be a subset such that $cardY \geq 2$. Let $T : X \multimap X$ defined by $T(x) := Y$, $x \in X$. Then

$$F_T = P_T = Y \text{ and } (SF)_T = (SP)_T = \emptyset.$$

Example 5. Let X be a nonempty set and $T : X \multimap X$ a multivalued operator. Then

(a) If $cardT(x) \geq 2$, $\forall\, x \in X$, then

$$(SF)_T = (SP)_T = \emptyset.$$

(b) If there exist $n_0 \in \mathbb{N}^*$ and $x^* \in X$ such that $\{x^*\}$ is the unique fixed set for T^{n_0}, then

$$(SF)_T = \{x^*\}.$$

We recall that $Y \subset X$ is a fixed set for T if $T(Y) = Y$.

Example 6 (H. Brézis and F. Browder [3]; see also W.A. Kirk and L.M. Saliga [12]). Let $(X, \leq)$ be a partially ordered set, $\varphi : X \to \mathbb{R}$ a functional and $T : X \multimap X$ defined by $T(x) := \{y \in X | x \leq y\}$. We suppose that

(i) $x \leq y,\ x \neq y \ \Rightarrow\ \varphi(x) < \varphi(y)$;

(ii) for any increasing sequence $(x_n)_{n\in\mathbb{N}}$ in X such that $(\varphi(x_n))_{n\in\mathbb{N}}$ is bounded, there exists $y \in X$ such that $x_n \leq y$, $\forall\, n \in \mathbb{N}$;

(iii) for each $x \in X$, $\varphi(T(x))$ is bounded from above.

Then

$$(SF)_T \cap T(x) \neq \emptyset,\ \forall\, x \in X.$$

3. When the existence of a strict fixed point implies the uniqueness?

Let (X, d) be a metric space. Then

$P_{b,cl}(X) := \{Y \in P(X) | Y \text{ is bounded and closed}\}$;

$P_{cp}(X) := \{Y \in P(X) | Y \text{ is compact}\}$.

Denote by H the Pompeiu-Hausdorff metric on $P_{b,cl}(X)$.

For Problem 1 we have the following result:

Theorem 1 ([22], p.87). *Let (X,d) be a metric space and $T: X \to P_{b,cl}(X)$ a multivalued α-contraction, i.e., $\alpha \in]0,1[$ and*

$$H(T(x),T(y)) \leq \alpha d(x,y), \ \forall \ x,y \in X.$$

Then

$$(SF)_T \neq \emptyset \ \Rightarrow \ F_T = (SF)_T = \{x^*\}.$$

Proof. First of all we remark that if T is a multivalued contraction, then $card(SF)_T \leq 1$.

Now, let $x^* \in (SF)_T$. The above remark implies that

$$(SF)_T = \{x^*\}.$$

Let $y^* \in F_T$. From

$$H(T(x^*),T(y^*)) \leq \alpha d(x^*,y^*)$$

we have that

$$\delta(x^*,T(y^*)) \leq \alpha d(x^*,y^*),$$

where δ is the diameter functional ([7], [22]).

So,

$$d(x^*,y^*) \leq \delta(x^*,T(y^*)) = H(T(x^*),T(y^*)) \leq \alpha d(x^*,y^*),$$

which implies $x^* = y^*$.

Remark 1. If (X,d) is a complete metric space and $T: X \to P_{b,cl}(X)$ is an α-contraction, then by S.B. Nadler's theorem ([15]) we get $F_T \neq \emptyset$.

Theorem 1 gives rise to the following:

Problem 1'. Let (X,d) be a metric space. Which are the multivalued generalized contractions, $T: X \to P_{b,cl}(X)$, having the property

$$(SF)_T \neq \emptyset \ \Rightarrow \ F_T = (SF)_T = \{x^*\}?$$

Some results for Problem 1' are given by A. Sîntămărian [17]. For strict fixed point theorems see I.A. Rus [20] and [24].

4. When a periodic point is a fixed point?

Let $(X,\leq)$ be a partially ordered set and $Y,Z \in P(X)$. We denote:
$\mathrm{Max}(X)$ the maximal element set of $(X,\leq)$,
$Y \leq Z$ iff $y \in Y$, $z \in Z \ \Rightarrow \ y \leq z$,
$Y \preceq Z$ iff for each $z \in Z$ there exists $y \in Y$ such that $y \leq z$.
By definition a multivalued operator $T: X \to P(X)$ is progressive if $x \leq T(x)$, $\forall \, x \in X$.

Example 7. Let $(X,\leq)$ be a partially ordered set and $t_i : X \to X$, $i = \overline{1,m}$, some progressive operators, i.e., $x \leq t_i(x)$, $\forall \ x \in X$. We consider the multivalued operator $T: X \to P(X)$ defined by $T(x) := \{t_i(x) | i = \overline{1,m}\}$. Then the operator T is progressive.

We have:

Lemma 1. *Let $(X,\leq)$ be a partially ordered set and $T: X \to P(X)$ a multivalued operator. The following statements are equivalent:*

(i) $x \leq T(x)$, $\forall \ x \in X$;

(ii) $Y \preceq T(Y)$, $\forall \ Y \in P(X)$.

Proof. (i) $\Rightarrow$ (ii). Let $Y \in P(X)$ and $z \in T(Y)$. Then there exists $y \in Y$ such that $z \in T(y)$. From (i), $y \leq z$. So, $Y \preceq T(Y)$.

(ii) $\Rightarrow$ (i). Let $x \in X$. We take in (ii), $Y = \{x\}$.

Lemma 2. *Let $(X, \leq)$ be a partially ordered set and $T : X \to P(X)$ a progressive operator. Then*

$$\mathrm{Max}(X) \subset (SF)_T.$$

Proof. Let $x_0 \in \mathrm{Max}(X)$. Then $x_0 \leq T(x_0)$ and $y \in T(x_0)$ imply $y = x_0$. So, $T(x_0) = \{x_0\}$.

Theorem 2. *Let $(X, \leq)$ be a partially ordered set in which every chain has an upper bound. Let $T : X \to P(X)$ be a progressive operator. Then*

$$F_T = P_T \neq \emptyset.$$

Proof. By Zorn's lemma ([6], p.590) we have that $\mathrm{Max}(X) \neq \emptyset$. ¿From Lemma 2 $(SF)_T \neq \emptyset$. Now, let $x_0 \in F_{T^n}$. By Lemma 1, $T^k(x_0) \preceq T^{k+1}(x_0)$, for $k \in \mathbb{N}$. Hence we have

$$x_0 \leq T(x_0) \preceq T^2(x_0) \preceq \cdots \preceq T^n(x_0) \ni x_0.$$

¿From the definition of the relations $\leq$ and $\preceq$ there exist $y_i \in T^i(x_0)$, $i = \overline{1, m-1}$, such that

$$x_0 \leq y_1 \leq \cdots \leq y_{n-1} \leq x_0.$$

So, $x_0 \in F_T$.

Example 8. Let $[0,1] \subset (\mathbb{R}, \leq)$ and $T : [0,1] \multimap [0,1]$ defined by $T(x) := \{x, 1\}$. Then T is a progressive operator and

$$\mathrm{Max}([0,1]) = \{1\},\ F_T = P_T = [0,1],\ (SF)_T = (SP)_T = \{1\}.$$

The above considerations give rise to the following

Problem 6. Let $(X, \leq)$ be a partially ordered set and $T : X \to P(X)$ a progressive operator. In which conditions we have that

$$(SF)_T \setminus \mathrm{Max}(X) \neq \emptyset?$$

5. Solutions in the terms of fractal operators

Let X be a nonempty set and $T : X \to P(X)$ a multivalued operator. The operator $\widehat{T} : P(X) \to P(X)$, $Y \mapsto T(Y) := \bigcup_{y \in Y} T(y)$ is called the fractal operator generated by T (see [1], [4], [13], [19], [28]). If the operator $\widehat{T}$ has exactly one fixed point, then this fixed point is called a fractal.

Example 9 ([1], [8], [28]). Let (X, d) be a complete metric space and $t_1, \ldots, t_m : X \to X$ α-contractions. This set of contractions generate the following multivalued operator

$$T_t : X \to P_{cp}(X),\ T_t(x) := \{t_1(x), \ldots, t_m(x)\},$$

called the Hutchinson-Barnsley operator.

Then the fractal operator, $\widehat{T}_t$, corresponding to T_t

$$\widehat{T}_t : (P_{cp}(X), H) \to (P_{cp}(X), H)$$

is an α-contraction, by a result of S.B. Nadler [15]. So, $\widehat{T}_t$ has a unique fixed point Y^*. Moreover, for any $Y \in P_{cp}(X)$

$$(\widehat{T}_t)^n(Y) \overset{H}{\to} Y^* \text{ as } n \to \infty.$$

So, $\widehat{T}_t$ is a Picard operator ([23]).

We mention that an operator $t : (X, d) \to (X, d)$ is called a Picard operator if $F_t = \{x^*\}$ and $t^n(x) \to x^*$ as $n \to \infty$, $\forall\, x \in X$.

We have the following result for our open problems.

Theorem 3. ([19], p.219). *Let (X, d) be a complete metric space and $U \subset P_{cl}(X)$ be such that $x \in X$ implies $\{x\} \in U$. Let $T : X \to U$ be an u.s.c. multivalued operator such that $A \in U$ implies $T(A) \in U$. We suppose that $\widehat{T} : U \to U$ is an Picard operator and denote by A_T^* the unique fixed point of $\widehat{T}$.*

Then

(i) $F_T \subset A_T^*$ and $A_T^* = \bigcup_{n \in \mathbb{N}^*} T^n(x)$, $\forall\, x \in F_T$.

(ii) If $T(x) \in P_{cp}(X)$, $\forall\, x \in X$, then $F_T \in P_{cp}(X)$.

(iii) If $T(F_T) = F_T$ and $F_T \in U$, then

$$T^n(x) \overset{H}{\to} F \text{ as } n \to \infty,\ \forall\, x \in X.$$

(iv) If $(SF)_T \neq \emptyset$, then $F_T = (SF)_T = \{x^*\}$.

Remark 2. For some results for Problem 5 see M.-C. Anisiu [2] and A.S. Mureşan [14].

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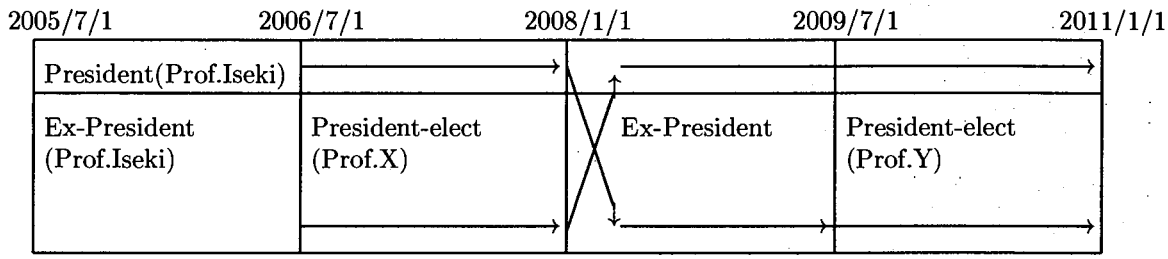
President Elect

The term of office in the case of the President is three years, and one and a half in the case of the president elect and immediate past president. Prof. Iseki took office as president on July 1, 2005 when the ISMS started. It was in the midst of the fiscal year, the term of office is exceptionally two and a half until the end of 2007. The president elect will take office on July 1, 2006 until the end of 2007 and become the president on January 1, 2008. Prof.Iseki will serve as the immediate past president from January 1, 2008 for one year and half.

The following is the flow chart of the terms of office.



2008/7/1 2008/1/1 B@2011/7/1 2011/1/1

The schedule for the election of the next President Elect (20^{th} period) is as follows:

September 2005 : Explanation of the rules of the election

November 2005 : Announcement of the election for the president elect and call for candidates

March 2006 : Announcement of the administrative policies of the candidates, Notification of the election

May 2006 : Announcement of the result

ISMS Bylaws 2006

On July 1, 2005, our society changed its name from JAMS to International Society for Mathematical Sciences (ISMS). On that occasion, we established Bylaws 2005, however, some substantial committees such as the Prize Nominating Committee are not specified in it. We are going to establish Bylaws 2006 and add some committees. In JAMS age, the members of various committees were almost domestic researchers. On the contrary, many of the members of International Advisory Board or Editorial Board have been internationally famous researchers from overseas. The ISMS is going to ask them to join the various types of committees and seek their cooperation toward research and publication activities. Such committees will be (1) SCMJ Managing Editors, (2) Editorial Committee of "Notices from the ISMS", and (3) ISMS (JAMS) Prize Nominating Committee, (4) International Joint Meeting Committee, (5) Board of Business Advisors of the Countries, (6) Board of Business Administrators. The ISMS members are invited to recommend appropriate overseas and domestic members for the committees.

ISMS Annual Meeting 2005

Program

General and Geometric Topology and its Applications

September 5

Kohzo Yamada (Shizuoka University) : Products of straight spaces
Lei Mou (Shizuoka University) : Base-normality and total paracompactness of subspaces of products of two ordinals
Haruto Ohta (Shizuoka University) : A characterization of paracompactness by insertion
Jun-iti Nagata : Remarks on symmetric neighborhood assignments

September 6

Takashi Sudo : Topics on n-point sets : A survey
Yasunao Hattori : On transfinite compact degree in metrizable spaces

Statistical Inference and Finance

September 6
Y. Takagi (Osaka Prefecture Univ.) : Asymptotic properties of likelihood ratio test statistics in the general non-inferior hypotheses
N. Funao (Takeda Pharmaceutical Company) : How to get a significance for free (Introduction of R)
A. Matsuo (Kansai Univ.) : Vuong test and the generalized linear model
M. Jimichi (Kwansei Gakuen Univ.) : On exact moments of estimators in the generalized Ridge regression
T. Segawa (Osaka Univ.) : A unit root test with respect to several stocks
T. Hayashi (Osaka Prefecture Univ.) : On the convergence rate of estimators of Hazard functions
N. Inagaki (Osaka Univ.) : On the estimation of parameters in the exponential families of stochastic processes

Real Analysis

September 6

Tsuyoshi Yoneda (Osaka Kyoiku University) : Convolution, dilation and differential equation

Naohito Tomita (Osaka University) : The space of Weyl symbols as a dual space

Tsuyoshi Yoneda (Osaka Kyoiku University) · Naohito Tomita (Osaka University)· Eiichi Nakai (Osaka Kyoiku University)· Kôzô Yabuta (Kwansei Gakuin University) : Amalgam space and singular integral

Toshikazu Watanabe : A generalization of integral for functions valued in linear ranked space with non-symmetric neighborhoods

Toshiharu Kawasaki (Hitachi, Ltd.) : Derivatives and integrals in vector spaces and their relations

Rataka TAHATA (Nihon University) : Marginal measure problem on the ranked space S'

September 7

Hiroo Kita (Kagoshima University) : Weighted inequalities for iterated maximal functions in Orlicz spaces

Katsuo Matsuoka (Nihon University) : On the interpolation theorems concerning CMO^p and HA^p

Yasuji Takahashi (Okayama Prefectural University)· Mikio Kato (Kyushu Institute of Technology) : Some norm inequalities in Banach spaces

Nonlinear Problems in Physics and Engineering

September 8

Le Huy Chuan and Atsushi Yagi (Osaka Univ.) : Forest kinetic model and dynamical system

Susumu Morita (Osaka Univ.) : Motion planning model of a human arm reaching task

Shin-ichi Nakagiri (Kobe Univ.) : Optimal control problems for second order Volterra integro-differential equations

Messoud Efendiev (Stuttgart Univ.) : On some new mathematical modeling of biofilms

Tohru Tsujikawa (Miyazaki Univ.) : Singular limit approach to higher dimensional patterns in a chemotaxis growth model

Koichi Osaki (Ube College of Technology) : Asymptotic Behavior of Reaction-Diffusion-Advection Systems

Call for Proposals and Organizers for Special Sessions in IVMS 2007 and IVMS 2008

The ISMS holds inter-regional videoconference via internet. The first videoconference was held in December 2003, the second in June 2004, and the third in March 2005. We are planning a videoconferencing system that will be able to connect up to four research sites, at present. Therefore presenters may be asked to travel to one of these local sites in order to present. The international videoconference consists of special sessions only. These sessions will be devoted to special fields of study, for example Fixed point theory and its applications. Each session's organizers will decide the type of the videoconference: presentation of original papers (contributed and/or invited papers) and/or expository articles, or tutorials. Speakers of the session can write on a white board or an OHP sheet, or can use PowerPoint. Participants can ask questions or make comments. All these are performed similarly to the traditional meetings. Organizers of the sessions chair their meetings at their co-ordination sites and can turn the speakers' sites.

Time differences between local sites will become an important factor. Please note the following possibilities: **There are three combinations of connections for inter-regional videoconferences**:

(1) Europe (morning) - Asia (evening) for 4hrs from 08:30(GT) to 12:30(GT)
(2) Asia (morning) - West coast area of USA (evening) for 4 hrs from 23:30(GT) to 03:30(GT)
(3) Asia (around noon) - Asia (evening) for 4 hrs from 16:00(GT) to 20:30(GT)

Every IVMS is performed through three steps.
(1) Trial of link in advance between (1) organizer and Osaka Nakanoshima Center (ONC) and (2) coorganizer and ONC are recommended.
(2) In the first step, all papers are presented on the homepages of the ISMS. (http;//www.jams.or.jp/ivms/index-ivms.html)
(3) In the second step of the IVMS, all papers are presented similary to the usual assemblytype meeting via internet, often using CD-ROMs or DVDs which are sent beforehand, when the author can't use VC system via internet.

Scheme of Videoconference

1) Videoconference System

In order to have a videoconference with us, your institutions should have one of the following in the descending order of desirability.

1. Videoconference room
2. Facilities for distance learining
3. Facilities in computer centers

Making use of one of the above, your institutions can be connected with our system(TANDBERG 6000) at Nakanoshima Center of Osaka University as far as your system satisfies the following ITU-T standards.

International Standards of Videoconference System

ITU-T	over IP H.323
Video Coding	H.261, H.263
Audio Coding	G.711, G.723 G.722, G.728
Multiplexing (Mux / Demux)	H.225
System Control	H.245
Transmission Rate	64kbps 128kbps 384kbps

Image dimensions : CIF : 352 × 288, QCIF : 176 × 144, SQCIF : 128 × 96

The following products are assured to be able to be connected with our "TANDBERG 6000".

H.323 Endpoints(over IP)
Equipment Software Revision
Polycom ViewStation 512MP 7.0.1, 7.2.4, Polycom ViewStation FX 4.2, 5.0
Polycom Via Video 5.0, PicutureTel 970 5.0.0.415, PicutureTel 680 5.0.0.415
PicutureTel (Intel) TeamStation 4.0a, Microsoft NetMeeting 3.01
VCON Vigo 4.6, VCON Falcon 0300.M07.D28.H11, VCON Cruiser 384 4.6
VTEL Galaxy 2.2.0.070, Sony PCS-1600 3.10, Sony PCS-6000 5.00
D-Lonk i2Eye 2.0.0.20

2) Organizers
Organizers should appoint invited speakers and call for papers for their sessions. The selection of the papers is left to the organizers' own choice. They should inform the ISMS of their programs with the titles, author's names of the papers. They should send the following "Form for Application of Organizers" to the ISMS.

3) Application Form for Organizers
Every organizer should inform the following data to the ISMS program committee (Through the homepage of the ISMS. http://www.jams.or.jp/hp/ivms_organizers.html).

1. Name of the organizer
2. E-mail address
3. Title of the planned special session
4. Names of the co-organizers of the joint universities/societies and their affiliations, if any.
5. Name(s) of the invited speakers, if any.

4) Participation
Individuals who wish to participate the videoconference can designate a session or sessions in which they are going to participate.

(1) For paticipants, there can be three sites that are connected with our key site simultaneously. The foreign participants can go to the nearest university announced on our web page as the joining sites.

(2) The application for participation can be made on the web imputting the required data in the registration form on the ISMS homepage.
(http://www.jams.or.jp/hp/ivms_organizers.html) or write items in the following forms and send by post to the International Society for Mathematical Sciences, 2-1-18 Minami Hanadaguchi, Sakai, Osaka 590-0075, Japan
Or applicants can mail by post the following data 5) $1 \sim 5$ both to the ISMS managing office and to the organizer of the session in which they wish to participate.

(3) The participation fee to cover the head office cost is free for the 2005, 2006 IVMS and 2007 IVMS.
Please note that local sites may request an additional fee to cover local costs and responsibilities from the 2005 IVMS. Check with your local site.

(4) The ISMS will give a password to the participants to enter the session of the web.

(5) The list of the participants will be announced beforehand on the web.

5) Application Form for Participants

1. Name of participant
2. Postal address of participant
3. E-mail address of participant
4. Do you contribute your paper? Yes or No?
5. If yes, please register the following items (1) $\sim$ (5) using form in the ISMS homepage (http://www.jams.or.jp/hp/ivms_organizers.html) or write items in the following forms and send by post together with registration form for participants.

(1) Title of paper
(2) Number of pages of the manuscript
(3) Author's name(s) : Last(Family) name First name Middle name (in this order)
(4) Is it possible for you to present a CD-ROM or a DVD in which your speech(lecture) is recorded?
(5) If you use compress utility of your file, please type the kind of compression you use (ZIP, gzip, tar, tar+gzip, tar+compress or others)

6) Presentation on the WWW
Programs, abstracts of the papers, and the full text of the papers of each session will be located beforehand on the web in pdf and will be saved for a month.

7)Proceedings After the videoconference, the papers selected by the organizers may be published on the WWW as proceedings.

8) Submission
Every author of the papers including invited papers should email the title, the abstract (within 20 lines) and the full text both to the ISMS office and to the organizer of the session in which he would like to participate. The organizers should make a program of their sessions and send it to the ISMS. The ISMS managing office will make the programs and the abstracts known to the public on the web. However, only the participants can view the full texts of the papers using a password. (We have about 40,000 accesses to our web site per month.)

9) Format of Submission
The format of submission should be in TeX file, preferably together with pdf file.
For the TeX files without pdf files, the ISMS managing office will process them into pdf format.

10) Connection Test on May 23, 2006
11) Deadlines for 2007 IVMS (May 22 $\sim$ 23, 2007)

For organizers: July 31, 2006
For consideration of contributed papers for special sessions

(1) For titles: Sept. 30, 2006
(2) For abstracts: Oct. 31, 2006
(3) For full texts: April 28, 2007
(4) For participation: May 16, 2007

12) Publication in SCMJ
In the usual submission to SCMJ, authors should designate one of the editors and send their papers both to the editor and to our office. In the case of the papers to be presented in IVMS, the organizers, the co-organizers and the invited speakers can, upon their approval, referee in place of the editors. The editorial board expects this will ensure the papers to be refereed quickly and published adequately.

13) ISMS(JAMS) Prize Winners
Winners of ISMS(JAMS) Prize can give their lectures or speeches at IVMS if they wish.

14) FAQ about videoconference

(Question 1) Where do the authors (lectures, speakers) present his/her paper in the videoconference?

(Question 2) Is there any limitation to the length of the lecture?

(Question 3) Can the authors make lectures using OHP?

(Question 4) What should the authors do except for making lectures?

(Question 5) Is there any limitation to the length of the papers?

(Question 6) Is there any limitation to the length of the abstract?

(Question 7) What format (style) of the papers is required?

(Answer 1) As the conference sites are announced on the web before the videoconference, the authors go to the nearest site to present their papers.

(Answer 2) It depends on the organizers of the sessions. Please ask the organizers directly. We are thinking of 30 minutes as a rough standard including questions and answers.

(Answer 3) Yes, they can. They can also use white boards. However, please ask the organizers if it is possible at their site.

(Answer 4) They should submit the papers (including abstract) for the web, which will be located on the web in advance.

(Answer 5) It depends on the organizers of the sessions. Please ask the organizers directly. We are thinking of fifteen pages as a rough standard.

(Answer 6) It should be within 20 lines in TeX style.

(Answer 7) They should be in TeX file. If possible, please add pdf file.

ISMS Co-sponsored Meetings

1. The 11^{th} Asia Pacific Management Conference

APMC-2005, Nov. 18-20, 2005, Tainan, Taiwan,
Theme: Managing Pacific Rim Enterprises, **Home page**: http://140.116.50.130/apmc/
The 11^{th} Asia Pacific Management Conference (the Conference), organized by National Cheng Kung University (Taiwan), will be held on November 18-20, 2005 in National Cheng Kung University, Taiwan. The aim of the Conference is to provide a forum for academics and professionals to share the advanced knowledge and experiences in management of Asian Pacific Rim. The Conference includes paper presentation and forum.

2. BIOCOMP2005
Diffusion Processes in Neurobiology and Subcellular Biology

December 12-16, 2005, Hotel Lloyd's Baia, Vietri sul Mare (Amalfi Coast), Italy
Web: www.biocomp2005.unina.it
E-mail: BIOCOMP2005@unina.it
Under the hight patronage of Univertsita' di Napoli Federico II
A program of invited lectures, selected contributed papers and round table discussions. Topics are centered on information processing and coding in neuronal systems and on molecular motors. Some invited talks will also focus on current problems in various other areas of applications of mathematics to life sciences and a "not to forget" session will be devoted to revisiting the origin of modern biomathematics, computation and information science as stemming from the pioneering work of Norbert Wiener, Warren McCulloch, Claude Shannon, and of other fathers of Cybernetics and of its related areas.
CHAIR : Prof. Luigi M. Ricciardi, Dipartimento di Matematica e Applicazioni, Università di Napoli Federico II, Via Cintia, 80126 Napoli, Italy E-mail: BIOCOMP2005@unina.it

Scientific Committee
P. Cull (USA), T. Ishihara (Japan), P. Lánsky (Czech Republic), Z. Ma (China), J. Mira Mira (Spain), R. Moreno Diaz (Spain), F. Moss (USA), K. Nakagawa (Italy), F. Oosawa (Japan), F. Pichler (Austria), S. Sato (Japan), J.P. Segundo (USA), C. E. Smith (USA), L. M. Ricciardi (Italy), J. Rinzel (USA), T. Yanagida (Japan)

Invited Speakers
K. Aihara (Japan), R.D. Astumian (USA), M. Bier (USA), R. Borisyuk (UK), E.N. Brown (USA), D.R. Chialvo (USA), O. Diekmann (The Netherlands), G.B. Ermentrout (USA), P. Hänggi (Germany), T. Hida (Japan), M. Holcombe (UK), F. Hoppensteadt (USA), H. Hotani (Japan), Y. Ishii (Japan), M. Mimura (Japan), R. Moreno Diaz Jr (Spain), F. Moss (USA), T. Nomura (Japan), F. Oosawa (Japan), P. Reimann (Germany), M. Sato (Japan), L. Schimansky-Geier (Germany), S. Schuster (Germany), Z.S. Siwy (USA), P. Talkner (Germany), T.Y. Tsong (Taiwan), H.C. Tuckwell (Germany), M. Ueda (Japan), S. Usui (Japan), T. Yanagida (Japan)

Conference Venue
Hotel Lloyd's Baia, Vietri sul Mare (Amalfi Coast), Salerno, Italy

Deadlines
Abstract due : August 21, 2005
Acceptance notice : September 15, 2005
Early registration : September 30, 2005
Late registration : Oct. 1 - Nov. 10, 2005

Abstracts
BIOCOMP2005 will accept electronic submission only. Authors are strongly encouraged to use one of the templates provided on website www.biocomp2005.unina.it to create their abstracts, with a preference for Microsoft Word.

Registrations
Online at http://biocomp.unina.it/. (No registration fee for accompanying persons):
EURO 250 if received before September 30, 2005;
EURO 350 if received between October 1 and November 10, 2005
EURO 450 if by cash upon arrival:
(1 Euro = 1.21 USD, exchange rate on July 14, 2005)

Hotel Reservations
Participants are expected to make their own hotel reservations. A limited number of rooms are available on a first-come-first-serve basis at Lloyd's Baia Hotel (Best Western 4-star hotel) where the Conference will be held. The hotel management has agreed to the following discounted rates: Daily rates, per person, including half-board treatment (i.e. breakfast and dinner):
a. Double/Twin room Euro 87
b. Double room, single use Euro 115
c. Triple room Euro 75
d. Single extra meal Euro 15
(1 Euro = 1.21 USD, exchange rate on July 14, 2005)

For Reservations at Lloyd's Baia Hotel
send your requests to lloyd.baia@tiscali.it, with Cc to BIOCOMP2005@unina.it, Subject "BIOCOMP2005 - Hotel reservation". Please, indicate arrival and departure dates, type of desired accommodation and credit card information. If you prefer, credit card information can be faxed to Dr. Maria Longobardi (+39-081-675665). You will receive a confirmation by email.

Organizing Institutions
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Universidad de Las Palmas de Gran Canaria
International Society for Mathematical Sciences (ISMS)

Conference Venue
Hotel Lloyd's Baia, Vietri sul Mare (Amalfi Coast)

CALL FOR PAPERS

Scientiae Mathematicae Japonicae(SCMJ) call for excellent papers.

(1) Authors can choose one of the editors in the Editors List and send their papers directly to him/her for refereeing which promises **quick refereeing and publication.**
(2) If the SCMJ authors prepare their files in ISMS standard format (Js.), the lead time from acceptance to the online publication **will be extremely short or nil.**
(3) In the proofreading is made by the SCMJ (Paper or TeX) author, we will publish the paper on the Web as soon as we receive the corrected galley proof.
(4) The Journal is reviewed by **Mathematical Review and Zentralblatt from cover to cover.**

(A) Submission

Authors are requested to choose one of the editors in the SCMJ editors list and send their papers, satisfying all of the following conditions, **directly to the editor**. The editors list can be obtained from (i) URL:http://www.jams.or.jp/ (ii) " Editorial Board" of SCMJ(Vol.62, No.1, July 2005).

Prepare **e-mail Form for Submission and three** hard copies of your paper, **three** hard copies of Form for Submission, and send them as follows.

- **To the editor's e-mail address**; Form for Submission (with the abstract)
- **To the editor's postal address**; **Two** hard copies of your paper, **two** hard copies of the Form for Submission (with the abstract)
- **To the e-mail address of ISMS** (http://www.jams.or.jp/hp/submission_f.html); Form for Submission (with the abstract)
- **To the postal address of ISMS**; **One** hard copy and **one** Form for Submission

The received date of the paper is the date when the editorial office receives the paper together with the Form for Submission, and not necessarily the date when the editors receive them.

To e-mail Form for Submission is mandatory to support the editor-receive-system, not to waste the precious reseach time of the editors and promote efficiency in the editorial procedure.

(B) Abstract

Every paper should contain an abstract. Try to limit your abstract to 20 lines when typed in TeX. The abstract should be a kind of mini research announcement which is **self-contained** and gives **the overview** of your paper. Abstracts of accepted papers are **very rapidly displayed** on ISMS home page and are announced **all over the world via Internet**. Abstracts in Paper Form and E-mail Form should be typed **in Text file**. If it is inevitable for you to use symbols in the abstract, you may make it in a TeX source file indicating **the kind of TeX** as notes, for example, (via LaTeX2e).

(C) Data

The full postal address, telephone and facsimile numbers, e-mail address of the author should be specified at the bottom of the last page of the manuscript. 2000 AMS Subject Classification and Keywords should be written both in Paper, E-mail Form and at the **footnote** on the first page of the manuscript.

(D) Receipt

ISMS will send a letter of receipt when we receive a hard copy, a Paper Form and E-mail Form (if the author has e-mail facility). The received date is to be specified in the letter.

(E) Revision

If revision of your paper is necessary, the editor informs you directly. When you revise abstract of your paper in that case, you should send new Paper Form with new abstract and E-mail Form with new abstract also.

(F) Acceptance or Rejection, Page Charges

ISMS will inform authors of **acceptance or rejection** of their papers **by e-mail.**

Author should choose one of the following 3 types of his final draft he will send after acceptance of his paper, (1) **P:** Paper draft only (2) **T:** Paper prepared using TEX and its source file (3) **Js:** Paper prepared using TEX with ISMS style file, and its souce file.

List of the page charges for SCMJ(2004year)

	Member	Non Member
Paper : P	¥3,850 (US$35, € 28)	¥4,450 (US$43, € 35)
TEX : T	¥2,200 (US$18, € 14)	¥2,750 (US$26, € 21)
Js : Js	¥1,100 (US$8, € 7)	¥1,700 (US$16, € 14)

The above page charges include 20 offprints and apply to the papers of Vol.57, No.1(January 2003) onward.

The additional page charge may be required for the figures contained in the papers. For more information, see our Web Page.

[1] **Js** (ISMS style TeX) files mean the files which are ready for publication without any process by our Publication Dept. Please note whether the file meets the requirement of the ISMS style or not **is judged by ISMS Publication Dept.** Js files can be made using the ISMS style file for AMS-LaTeX, LaTeX, or LaTeX2e, which can be downloaded from ISMS Web Page. AMS-TeX files cannot be **Js files** any more.

The procedure to make Js files :

(a) Prepare your paper in AMS-LaTeX, or LaTeX.

(b) Use the following ISMS style file to make your paper "ISMS style TeX" (Js). (The ISMS style files can be obtained from ISMS Web Pages.)

If your paper contains graphs or figures which cannot be processed even in LaTeX(2e), make them EPS (Encapsulated Post Script) files and then PDF files.

(G) After Acceptance

If the paper is accepted, P authors are requested to send the following (1) & (2), T and Js authors (1) – (4).

(1) A hard copy of the final draft(for publishing)

(2) Paper Form for WWW

(3) The source file of the final draft in TeX, by e-mail or on diskette.

(4) E-mail Form for WWW

(H) Proofreading

ISMS will send a galley proof to P and T authors only but **not to Js authors.** We regard the final files sent by Js authors as ready for publication.

(I) Offprints

Every author can obtain a **password to read his paper** and can make **as many offprints as they want**, using Acrobat Reader. A copy of the printed version of **the issue** is US$10 or equivalent UNESCO Coupons for ISMS members and Authors and US$30 or equivalent UNESCO Coupons (or Union Postale Universelle) for non-members.