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Journal of Molecular Medicine

MDC, Max-Delbrück-Center, Robert-Rössle-Strasse 10, 13122 Berlin

Springer International

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Juni 16, 1999

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Dear Dr. Ivanov,

I have recently read with great interest your paper entitled "Multifractality in human hearbeat dynamics" which appeared in the June 3 issue of *Nature*. I have discussed your data with the editorial board of the *Journal of Molecular Medicine (JMM)* and we would like to invite you to submit a manuscript on this or a related topic. We attempt to publish research findings of the highest quality, and I therefore feel that a contribution from your laboratory in this area of research would be of great interest to our readership. We would in particular be pleased to receive an original article on this topic; however, a review article contextualizing your area of expertise would also be welcome. Please feel free to collaborate with co-authors as you see fit.

You will see from the enclosed copy of *JMM* that we cover the most recent and interesting developments in the major areas of molecular medicine. *JMM*, published by Springer International, is the continuation of the prestigious, traditional journal for clinical medicine established in 1864, the *Klinische Wochenschrift*. Published now in English, the journal has established an international reputation for penetrating articles written by leading scientists.

You will find a copy of the instructions to authors and some material describing the journal in more detail in the enclosed issue. We look forward to receiving your reply, along with an approximate indication of when you might be able to submit your work, at your earliest convenience.

Sincerely,

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AMERICAN INSTITUTE OF PHYSICS • CHAOS An Interdisciplinary Journal of Nonlinear Scienc

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July 17, 2000

Prof. Plamen Ch. Ivanov
Center for Polymer Studies
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Dear Prof. Ivanov;

As Guest Editor of the journal, ***Chaos: An Interdisciplinary Journal of Nonlinear Science***, I am putting together a special Focus Issue based on selected papers from the *Unsolved Problems of Noise and fluctuations* (UPoN'99) conference. With this letter, I would like to formally invite you to contribute an article for this issue based on your UPoN'99 paper entitled "Beyond 1/f: multifractility in human heartbeat dynamics".

I would like to remind you that a verbatim rehash is not permitted, and that you are expected to both improve and augment your original paper. To this end, you are also expected to give the paper a new title. Please aim for a maximum of 15 final pages – though this is flexible and you can email me if you require more. In keeping with the theme of "unsolved problems" you are required highlight open questions in the paper and the concluding section must be called "Conclusions and Open Questions." The refereeing will not follow the UPoN double-blind style, but will conform to the standard journal practice of ***Chaos***.

Since the aim is to make the volume informative and accessible to a wide range of scientists, it is important that your contribution is as didactic and expository as possible. The style should conform to the guidelines found at the AIP ***Chaos*** URL:

http://ojps.aip.org/journals/doc/CHAOEH-home/chosubmit.html.

Please be sure to write a "lead paragraph" (see enclosed Journal and above URL for style). The "lead paragraph" appears in bold after the abstract.

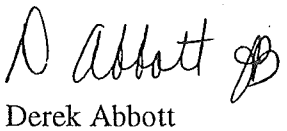
Please let Janis Bennett (address on this letterhead) know at your earliest convenience, but not later than **September 10, 2000**, the title of your contribution and your author sequence. A list of tentative authors and topics is enclosed. It is important that you check your coordinates on the enclosed list and note any modifications or additions in your communications with the Journal. Please send

your phone, FAX and e-mail information to Janis. You are encouraged to exchange information with the other authors, as necessary.

The deadline for submitting papers for this Focus Issue (which is scheduled to appear as Volume **11** No. 3, 2001) is **December 15, 2000.** Your manuscript will be reviewed within 4-6 weeks. When submitting your manuscript, please send 4 copies to Janis Bennett at AIP at the address on this letterhead.

We believe that the ***Chaos*** Focus Issue on *Unsolved Problems of Noise* will become a valuable resource on the subject. Thank you in advance for your willingness to contribute to this special issue.

Sincerely,



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July 14, 2000

%%%%%%%%%%%%%%%% REQUEST FROM SCIENCE MUSEUM IN LONDON %%%%%%%%%%%%%%%%%%

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From n.perrin@nmsi.ac.uk Thu Sep 2 11:35:33 1999
X-Sender: nmperrin@nmsi.ac.uk
Date: Thu, 02 Sep 1999 16:45:58 +0100
To: plamen@buphy.bu.edu
From: Nicola Perrin <n.perrin@nmsi.ac.uk>
Subject: Science Museum Question
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"

Dear Dr Ivanov

I was wondering if you could give me some information about your work with heartbeats. I have just been looking at your article in Nature, 3 June 1999 (Multifractiality in human heartbeat dynamics) which was extremely interesting. I hope it might be relevant to work we are doing here.

To give you some background, the Science Museum in London is currently developing a new wing, the Wellcome Wing, due to open in 2000 dedicated to contemporary science, technology and medicine. One of the galleries in the wing is Pattern Pod, a gallery for the under-8s and their parents looking at patterns in contemporary science. This will cover a wide range of patterns, including visual, texture, movement and sound patterns.

One exhibit will look at body rhythms, including heartbeats, and sound patterns in breathing and the intestines. For a contemporary science link we are going to talk about the recent work on chaotic heartbeats.

Any information you could give us about your work would be really helpful. Ideally we would also like to represent the difference between a healthy and diseased heart graphically. Do you have any images that would show the difference between the heartbeats clearly, for the layman? We always find pictures help explaining things, but I haven't yet found any appropriate ones.

Any help you could give us would be really helpful.
With many thanks,
Nicola Perrin

Nicola Perrin
Wellcome Wing Development Team
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%%%
From n.perrin@nmsi.ac.uk Mon Sep 20 12:25:24 1999
X-Sender: nmperrin@nmsi.ac.uk
Date: Mon, 20 Sep 1999 17:36:08 +0100
To: Plamen Ivanov <plamen@buphy.bu.edu>
From: Nicola Perrin <n.perrin@nmsi.ac.uk>
Subject: Another question
In-Reply-To: <199909081919.PAA01185@buphy.bu.edu>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"

Dear Plamen,

I have now looked properly at all your pictures which look really useful. I will try and call you to discuss them - it will probably be next week because I'm not in the office that much this week. What is the time difference to you?

In the meantime, can I ask you another question? Do you know if any similar work has been done analysing babies heartbeats? Am I right in thinking they would also be chaotic?

Because the gallery is for under-8s, the exhibit that looks at Body Rhythms also includes a baby, with a very fast heartbeat. We were going to talk about the reasons behind this. However, the latest idea is to link the section about the chaotic heartbeat with the one about the baby's heart beat. Do you think this would be possible? Do you have any suggestions how we might do this?

Any ideas you have would be really helpful.
Many thanks,
Nicola

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October 1, 2001

Prof. Plamen Ch. Ivanov
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Dear Prof. Ivanov;

On behalf of the Editors of *Chaos* I am writing to thank you for your contribution to our focus issue on "Unsolved problems of noise and fluctuations,"which Dr. Abbott assembled. These focus issues have proved to be one of the most valuable and widely appreciated services of *Chaos* for the nonlinear community, and you can be justifiably proud of the inclusion of your article in the issue. I hope that you will maintain close contact with our journal, as an author, referee, and reader, and that you will call *Chaos* to the attention of any of your colleagues who might also be interested in contributing to the journal. Again, many thanks

Yours sincerely,

David K. Campbell
Editor in Chief

%%%%%%%%%%%%%%%%%%%%%%%% REQUEST FOR COLLABORATION %%%%%%%%%%%%%%%%%%%%

%%%

From zolli@ifi.unizh.ch Wed Feb 16 18:20:03 2000
Date: 17 Feb 2000 00:19:59 +0100
From: "Christoph Zollikofer" <zolli@ifi.unizh.ch>
To: plamen@buphy.bu.edu
X-Authentication-Warning: sebastian.unizh.ch: zolli owned process doing -bs
Subject: multifractals
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

Dear Dr. Ivanov,

I'm a biologist working at the Zurich University (Switzerland) in the Depts. of Anthropology and of Computer Science. - Some time ago, you sent me on my request some reprints of your work on heartbeat multifractality. I went through these papers with great interest: I was looking for methods to measure multifractality, and the method you propose in your Nature 399 ('99) paper seems to be one of the few that is really working.

I have now the following question: I have some morphological data that I suspect to have (geometric) multifractal properties, but I do not have the tools to test this hypothesis. - Would you be interested in testing a short sequence of my data with your method? I could transform them into a path diagram similar to that of heartbeat intervals versus beat numbers (Fig. 1A in the paper cited above).

I would greatly appreciate your advice.

Best regards,

Christoph Zollikofer

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To whom it may concern

I am writing the following statement on Dr. Plamen Ch. Ivanov's work in my capacity of being the editor of a survey work entitled "Wavelets in Physics" due to appear with Cambridge University Press in May or June 1999.

Dr. Ivanov, with his coauthors, contributed Ch. 10 of this book entitled:
"Wavelets in medicine and physiology". My attention was drawn to their work by an original paper they published in the distinguished journal "Nature", namely "Scaling behaviour of heartbeat intervals obtained by wavelet-based time-series analysis.", Nature 283, (1996), 323-327.
After reading this paper I asked Dr. Ivanov and coauthors to expand this brief, original paper into a chapter of my book, and they did a very good job in producing this.

The authors very cunningly use the new mathematical tool of "wavelets" to reveal different patterns in cardiograms of groups of healthy people and patients suffering from sleep apnoea. They also made a first attempt to develop on the basis of this work, a new diagnostic for individuals.
Since then the work of Dr. Ivanov has developed further, witness a new paper accepted on April 7, 99 for publication in Nature.

In my opinion this line of research shows great promise for real clinical application and could raise standards of medical care. It is highly important that this work can be carried on and it is certainly in very good hands with Dr. Ivanov.

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PC Ivanov
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Dec. 2, 1999

Dear Dr. Ivanov,

The journal "Herzschrittmachertherapie & Elektrophysiologie" publishes in the area of cardiac pacing and electrophysiology for an international audience with a view to new developments in this field. The journal includes peer reviewed papers, reviews, contributions on new experimental methods as well as case reports. The journal also publishes special issues dealing with topics that are of special interest or actuality.

We are planning such a special issue for the coming year on the following topic:

The significance and clinical applications of nonlinear dynamics in heart rate variability

As such, we are looking to recruit competent and reputable authors to contribute to this issue. We hope to be able to show that the analytic methods based on nonlinear dynamics have developed to the point where they can make valuable contributions not only to the understanding of cardiac rhythms but also that they may aid in the identification of patients with various pathologies and who may at risk for arrhythmia.

We would be very pleased if you could participate in this project with an paper on the subject:

Fractal scaling in the human heartbeat

Please feel free to modify the title if you feel it is not appropriate.

The deadline for submission has been set to March 15th, 2000. We hope that you can find the time to contribute and are looking forward to hearing from you, even if you should decide not to take part in this issue. Should you have any questions, please do not hesitate to contact us.

Yours sincerely,

Peter Van Leeuwen, PhD

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Plamen Ch. Ivanov
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I am preparing a manuscript to be published by **John Wiley & Sons, Inc.:**
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Estimated publication date: **Fall 2000** Approximate number of pages: **600**

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Title of book or periodical: **Nature, Vol. 383:323-327**
Title of selection: **Scaling behavior of heartbeat intervals obtained by wavelet-based time-series analysis**
Copyright date: **1996**
From page: , line , beginning with the words
To page: , line , ending with the words
Figure # **2** , on page **325** Table # on page

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Thank you,

E. N. Bruce

Eugene N. Bruce

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December 2000

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Mr. Plamen Ivanov
856 Beacon St. Apt. 10
Boston, MA 02215-3120

Dear Mr. Ivanov,

It is with great pleasure that I extend to you an invitation to be included in the forthcoming 2001-2002 edition of **Strathmore's WHO'S WHO.**

This unique volume recognizes those men and women who have achieved success in their respective fields. This special edition of the registry is designed as an outstanding networking source for the American marketplace as well as a world wide source for the Who's Who of global decision makers.

We believe your accomplishments, as a highly respected professional in your field, merit very earnest and intense consideration for inclusion.

Kindly respond to this invitation, now while it is convenient, by completing the enclosed information card. Should your inclusion be confirmed there is **never** a cost or any obligation whatsoever for publication of all information submitted on the enclosed information card.

On behalf of Strathmore's WHO'S WHO, we wish you continued success.

Sincerely,

Denise Parker

Denise Parker
Executive Director

To: pre-authorization code: AB1736

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