2011-09-04

Dear Editor,

I have the pleasure to submit the manuscript entitled "Physics of uncertainty, the Gibbs paradox and indistinguishable particles" to be considered for publication in Physica A.

I hope you and the reviewers will enjoy reading it and favour its publication.

Kind regards,

Demetris Koutsoyiannis

PS. The manuscript is a single pdf file that includes a small figure. All required items of the submission have been uploaded or inserted in the forms.

Subject: Your Submission
From: "C. Tsallis" <tsallis@cbpf.br>
Date: 24/10/2011 02:17
To: dk@itia.ntua.gr
CC: tsallis@cbpf.br

```
Ms. Ref. No.:  PHYSA-11595
Title: Physics of uncertainty, the Gibbs paradox and indistinguishable particles
Physica A

Dear Dr. Koutsoyiannis,

With regard to your manuscript  "Physics of uncertainty, the Gibbs paradox and
indistinguishable particles" , we regret  to communicate to you that  we cannot
accept  its publication  in  Physica A. We thank you for your interest in Physica A,
and hope that the present issue will not prevent you from future submissions to our
journal.

Sincerely yours,

C. Tsallis, Editor
--------------------------
Referee's report


The author discusses the well-known difficulties of the standard definition of
entropy in classical statistical mechanics, which leads to a non-extensive form of
the thermodynamic entropy (and to the "Gibbs paradox") if one does not insert the
proper "Boltzmann correcting counting factor". I agree that this is an annoying
problem, and that it is not totally satisfactory to resort to the classical limit of
the quantum formulations in order to derive thermodynamically sound results. Also, I
have the feeling that these questions are still unresolved, and that it is
interesting to obtain proper classical (and quantum) forms of the entropy on the
basis of a maximization principle. The relatively recent paper by Swendsen (ref. 8)
gives a flavor of the misunderstandings on this subject.
In the present paper the author proposes a solution to this problem, by defining a
(nonextensive) probabilistic entropy <PHI>, on the basis of a variational principle,
and an extensive entropy <PHI>^{?} (see equations 24 and 25). I agree that <PHI> and
the associated density ? are "objective quantities", and that the introduction of
<PHI>^{?} is an interesting device to correct the usual defects of classical
statistical mechanics.
My main objection to this paper is the semantic (maybe philosophical) character,
which does not seem to go beyond most of the previous attempts to deal with the
classical gas of (distinguishable) particles. Let me make some remarks:
(i) The introduction of Planck´s constant in eq. 16, for example, is the same ad hoc
device (of quantum origin) that has been used since the times of Sackur and Tetrode;
(ii) The construction of <PHI>^{?} by subtracting the proper N-depending term is
entirely ad hoc (unless one invokes the classical limit of the quantum formulations);
(iii) There is no attempt to formulate a maximum entropy principle for a truly
quantum mechanical system. In other words, what is the definition of statistical
entropy for a truly quantum mechanical system, with the usual symmetry requirements
of the wave functions?
(iv) The only example given by the author is the gas of free particles, which may be
interesting from the pedagogical point of view, but which is quite trivial. For
example, are there any problems of indistinguishability in the computer simulations
of a gas of particles?
(v) At the end of the paper, the author refers to a number of real problems that
might be affected by the definition of statistical entropy (marginal distribution
properties of hydrometheorological processes, clustering of rainfall occurrence,
emergence of Husrt-Kolmogorov dynamics, ...). It should be interesting to analyze
one of these problems.
In conclusion, this paper seems to be correct. Also, it is true that the very
```

definition of entropy still poses questions in classical statistical mechanics. However, I do not think that this paper contains enough new and undisputable material to deserve publication in a research journal as Physica A. This paper has indeed an interesting "ideological" content, but the author does not discuss concrete situations which cannot be dealt with by resorting to the usual classical limit of the quantum formulations.

For further assistance, please visit our customer support site at http://support.elsevier.com Here you can search for solutions on a range of topics, find answers to frequently asked questions and learn more about EES via interactive tutorials. You will also find our 24/7 support contact details should you need any further assistance from one of our customer support representatives.

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ **NATIONAL TECHNICAL UNIVERSITY OF ATHENS**

ΣΧΟΛΗ ΠΟΛΙΤΙΚΩΝ ΜΗΧΑΝΙΚΩΝ SCHOOL OF CIVIL ENGINEERING
ΤΟΜΕΑΣ ΥΔΑΤΙΚΩΝ ΠΟΡΩΝ DEPARTMENT OF WATER RESOURCES
& ΠΕΡΙΒΑΛΛΟΝΤΟΣ & ENVIRONMENTAL ENGINEERING

ΔΡ Δ. ΚΟΥΤΣΟΓΙΑΝΝΗΣ, ΚΑΘΗΓΗΤΗΣ DR D. KOUTSOYIANNIS, PROFESSOR

24.10.2011

Professor C. Tsallis
Editor, Physica A

Re: Ms. Ref. No.: PHYSA-11595, Title: Physics of uncertainty, the Gibbs paradox and
       indistinguishable particles

Dear Professor C. Tsallis,

I am writing with regard to your editorial decision for the above referenced paper. I hope you will understand that, for a Greek scientist, a rejection made on the grounds that the referee's "*main objection to this paper is the semantic (maybe philosophical) character...*" is very disappointing. Normally, I would expect that an objection on this grounds would be viewed positively and, combined with the referee's conclusion that "*this paper seems to be correct*", would be enough ensure publication of the paper. Therefore, I hope you can read the rebuttal to the other review comments in the next pages and accept my appeal to rethink your editorial decision.

Sincerely,

Demetris Koutsoyiannis

✉ ΗΡΩΩΝ ΠΟΛΥΤΕΧΝΕΙΟΥ 5, 157 80 ΖΩΓΡΑΦΟΥ • HEROON POLYTECHNEIOU 5, GR-157 80 ZOGRAPHOU, GREECE
☎ +30 210 772 2831 🖷 +30 210 772 2832 • dk@itia.ntua.gr • http://www.hydro.ntua.gr/dk/

Referee's report

(and author's replies to the anonymous referee's comments)

The author discusses the well-known difficulties of the standard definition of entropy in classical statistical mechanics, which leads to a non-extensive form of the thermodynamic entropy (and to the "Gibbs paradox") if one does not insert the proper "Boltzmann correcting counting factor". **I agree that this is an annoying problem**, and that it is not totally satisfactory to resort to the classical limit of the quantum formulations in order to derive thermodynamically sound results. Also, I have the feeling that **these questions are still unresolved**, and that it is interesting to obtain **proper classical (and quantum) forms of the entropy on the basis of a maximization principle**. The relatively recent paper by Swendsen (ref. 8) gives a flavor of the misunderstandings on this subject.

Reply: I agree with the referee and have highlighted above some of his phrases which I think favor, rather than oppose, publication of the paper. The paper by Swendsen is indeed included in the paper (ref. 8) to highlight the importance of trying to clarify some fundamental concepts related to the nature and definition of entropy.

In the present paper the author proposes a solution to this problem, by defining a (nonextensive) probabilistic entropy <PHI>, on the basis of a variational principle, and an extensive entropy <PHI>^{?} (see equations 24 and 25). I agree that <PHI> and the associated density ? are "objective quantities", and that the introduction of <PHI>^{?} is an interesting device to correct the usual defects of classical statistical mechanics.

Reply: I am happy to see the referee's agreement.

My main objection to this paper is the semantic (maybe philosophical) character, which does not seem to go beyond most of the previous attempts to deal with the classical gas of (distinguishable) particles.

Reply: (1) I feel proud that the referee diagnosed a semantic and maybe philosophical character of the paper. What puzzles me is that he puts it as an **objection**, while in my view it is a flattering characterization of the paper, in accord to the fundamental questions (still unresolved as the referee points out) on the notion of entropy.

(2) Furthermore, the paper is not speculative in its addressing of these fundamental questions. It contains a rigid mathematical part with mathematical definitions and mathematical derivations.

(3) Whether it goes beyond most of the previous attempts or not, is not a fact (at least it was not proven by the referee) but an interpretation of the referee. The fact is that what is proposed is novel—not contained in earlier publications (see below). A rejection based on interpretation or even disagreement of the referee is not justified.

Let me make some remarks:

(i) The introduction of Planck's constant in eq. 16, for example, is the same ad hoc device (of quantum origin) that has been used since the times of Sackur and Tetrode;

Reply: The referee is not right. The introduction of the Planck's constant is not *ad hoc*. There is a reasoning about this, which includes the following points:

(1) Entropy is a dimensionless quantity (p. 5).

(2) The modern definition of entropy for **continuous variables** (eqn (8)) is based on a relative metric, a divergence of a probability density function from a reference measure (e.g. the Lebesgue measure), also called the 'invariance measure' (see p. 375 in E. T. Jaynes, Probability Theory, The Logic of Science, Cambridge, 2003). This recovers the nondimensionality of entropy for continuous variables, similar to **discrete ones**.

(3) As explained below eqn (8), the Lebesgue density cannot be proper (i.e. normalizable to sum up to 1). Thus, any constant density with the required units to ensure dimensional consistence is allowable. Note that (contrary to what happens in discrete variables) in continuous variables the entropy is not an absolute measure of uncertainty but a relative one, which depends on the chosen constant. This is not a caveat; actually it is the same as in any indefinite integral (an integral without bounds, also known as antiderivative). Note that entropy maximization does not depend on the constant chosen.

(4) The value of the constant Lebesgue density is thus a matter of convenience rather than a unique physical quantity. The Planck's constant h and a fundamental mass m_p are two physical quantities, which, combined as explained above eqn (12): (a) serve our purpose for dimensional consistency and (b) keep consistency with Sackur and Tetrode results (for historical reasons and for the additional reason that in this very point there is nothing wrong in the specific choice). However, as explained above, any other constant will make the same job, provided that it has the same units. For example we could replace $(m_p/h)^3$ with $1 \text{ m}^{-6} \text{ s}^3$ without any problem in any of the subsequent analyses.

(ii) The construction of <PHI>^{?} by subtracting the proper N-depending term is entirely ad hoc (unless one invokes the classical limit of the quantum formulations);

Reply: I do not agree with the referee. There is a three-page justification (section 5) of this construction plus a page explaining the equivalence of the descriptions by Φ and Φ^* (section 6). The referee does not explain why he thinks that it is *ad hoc*. Even if the referee thinks that it is *ad hoc* (and I must repeat that I do not agree with this), this is not a reason to recommend rejection of the paper: Several ideas, elements and concepts have been introduced as *ad hoc* or heuristically and, fortunately, this has not prevented their publication. Their publication in many cases were fertilizing as such elements may later have found a more consistent definition.

(iii) There is no attempt to formulate a maximum entropy principle for a truly quantum mechanical system. In other words, what is the definition of statistical entropy for a truly quantum mechanical system, with the usual symmetry requirements of the wave functions?

Reply: I agree with this comment—but this is done deliberately. A paper cannot cover all cases. Sometimes publication of a paper triggers similar studies with additional applications, which sometimes extend the applicability of its results and other times falsify its results. This is trivial in science, I think. I also think that scientific papers published in journals are short and concise. For example, I see that the current issue of Physica A (Volume 391, Issues 1-2) contains 45 papers in a total of 413 pages, which makes an average of about 9 pages per paper. I estimate that my paper has already exceeded this average length.

(iv) The only example given by the author is the gas of free particles, which may be interesting from the pedagogical point of view, but which is quite trivial. For example, are there any problems of indistinguishability in the computer simulations of a gas of particles?

Reply: I would not characterize the example as trivial; rather it is the standard in similar situations. "Standard" and "trivial" have quite different meaning. I think that colliding particles could also be

examined but this would again require an extended length and I do not find that it would add anything important to the essence of the paper.

(v) At the end of the paper, the author refers to a number of real problems that might be affected by the definition of statistical entropy (marginal distribution properties of hydrometheorological processes, clustering of rainfall occurrence, emergence of Husrt-Kolmogorov dynamics, ...). It should be interesting to analyze one of these problems.

Reply: I have no difficulty to include such examples but I am afraid this would distract the reader from the scope of the paper. Besides, the referee may overlooked the fact that I already provide citations to such examples, one of which is a recent paper in Physica A (ref. 6, D. Koutsoyiannis, Hurst-Kolmogorov dynamics as a result of extremal entropy production, *Physica A,* 390 (8), 1424–1432, 2011).

In conclusion, this paper seems to be correct. Also, it is true that the very definition of entropy still poses questions in classical statistical mechanics. However, I do not think that this paper contains enough new and undisputable material to deserve publication in a research journal as Physica A. This paper has indeed an interesting "ideological" content, but the author does not discuss concrete situations which cannot be dealt with by resorting to the usual classical limit of the quantum formulations.

Reply: I am really happy to see that the referee, despite being negative about the publication of the paper, finds it **correct**. Of course I disagree that a paper should have **undisputable** material in order to deserve publication. I hope that the Editor could agree with me that dispute is an instrument of scientific progress (the recent discussion on faster-than-light neutrinos is one example) and that publication is justified for articles that could be disputed by many, provided that they are found not to be wrong. Finally, I fully disagree with the referee when he says that the paper does not contain enough **new** material for the following reasons:

(1) The referee does not (in fact cannot) provide any reference which contains the previously published "not new" material.

(2) The indistinguishability idea, the Maxwell-Boltzmann statistics and the Bose-Einstein statistics are standard notions almost globally accepted; although they may have been disputed a few times (see references in paper) they still remain the standard. A paper that disputes them on some new grounds could not be characterized as "not new". Perhaps the ideas in the paper could prove disputable (although the referee does not seem to dispute them) but **they are new**.

Subject: Re: Your Submission
From: Constantino Tsallis <tsallis@cbpf.br>
Date: 25/10/2011 00:25
To: Demetris Koutsoyiannis <dk@itia.ntua.gr>

Dear Demetri,

I am really sorry, I can understand your disappointment. But in Physica A
we are four Main Editors, and we apply a common thinking about manuscripts
to be published by the journal. The opinion of the Referee was far from
enthusiastic. It is not the Physica A generic policy to reconsider
manuscripts after rejection by one of the Main Editors.

With my best regards,

Constantino

Constantino Tsallis

Department of Theoretical Physics, Head
Centro Brasileiro de Pesquisas Fisicas
Rua Xavier Sigaud 150, 22290-180 Rio de Janeiro - RJ, Brazil
and
National Institute of Science and Technology for Complex Systems, Head
Phone: (55) (21) 2141 7190
Fax: (55) (21) 2141 7401

On 24/10/11 17:23, "Demetris Koutsoyiannis" <dk@itia.ntua.gr> wrote:

> Dear Constantino,
>
> Thank you very much for the fast processing of my paper. I hope you can
> forgive me if I bother you with my attached appeal to rethink your
> editorial decision. So, please see the attached document. I will
> appreciate your reply.
>
> Kind regards,
>
> Demetris
>
> Demetris Koutsoyiannis
> Department of Water Resources and Environmental Engineering
> School of Civil Engineering
> National Technical University of Athens
> Heroon Polytechneiou 5, GR 157 80 Zographou, Greece
> Tel. +30 210 772 2831, Fax +30 210 772 2832
> dk@itia.ntua.gr - http://www.itia.ntua.gr/dk
>
> On 24/10/2011 02:17, C. Tsallis wrote:
>> Ms. Ref. No.: PHYSA-11595
>> Title: Physics of uncertainty, the Gibbs paradox and indistinguishable
>> particles

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ   **NATIONAL TECHNICAL UNIVERSITY OF ATHENS**

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& ΠΕΡΙΒΑΛΛΟΝΤΟΣ   & ENVIRONMENTAL ENGINEERING
ΔΡ Δ. ΚΟΥΤΣΟΓΙΑΝΝΗΣ, ΚΑΘΗΓΗΤΗΣ   DR D. KOUTSOYIANNIS, PROFESSOR

31.10.2011

The Editor
The British Journal for the Philosophy of Science

Re: Physics of uncertainty, the Gibbs paradox and indistinguishable particles

Dear Editor,

I have the pleasure to submit a manuscript entitled "Physics of uncertainty, the Gibbs paradox and indistinguishable particles" to be considered for publication in *The British Journal for the Philosophy of Science*.

I have not submitted any article before in your journal. I submitted an earlier version of the present article to *Physica A* and it was rejected, although it was found correct, because, according to the referee, its character was semantic or philosophical. Therefore I thought it would make sense to submit it to your journal.

For your information I include in the following pages my rebuttal to the editorial decision in *Physica A* (which was not considered by its Editor), along with the review comments I received and my replies to them.

Please note that in the present version I have deleted all references to my own papers (in order to make the manuscript anonymous), as well as a couple of sentences which contained these references; therefore one of my replies to the referee (the one which contains my name) does not make sense for the present version.

I hope you will find the manuscript acceptable for publication.

Sincerely,

Demetris Koutsoyiannis

Subject: Decision on Manuscript ID BJPS-2011-342
From: bjps@leeds.ac.uk
Date: 26/11/2011 20:30
To: dk@itia.ntua.gr

Dear Prof. Koutsoyiannis,

Thank you for submitting your paper, "Physics of uncertainty, the Gibbs paradox and indistinguishable particles" (BJPS-2011-342), to The British Journal for the Philosophy of Science.

We regret to inform you that we have decided not to accept your paper for publication. As you will appreciate, the Journal receives a large number of high quality submissions every year, and consequently competition for space in the journal is intense. Some comments from one of our referees are attached, which we hope you will find helpful.

Yours sincerely,

Professor Steven French and Dr Michela Massimi
Editors in Chief, The British Journal for the Philosophy of Science
bjps@leeds.ac.uk

The British Journal for the Philosophy of Science
Editors:
Steven French
Michela Massimi

Editorial Address:
Department of Philosophy
University of Leeds
Leeds LS2 9JT
UK

Comments

This paper does contain some interesting insights, but BJPS is not the right place for it to be published. The paper is paper is written from a physics perspective and should be submitted to a physics journal: (a) quite some time is spent on proving mathematical results; (b) the paper is rather casual about conceptual points (e.g. the issue of indistinguishability and the interpretation of entropy as objective or subjective); (c) no connection is made to the vast philosophical literature on indistinguishibility and on the Gibbs paradox, or indeed to any philosophical literature at all. The last point alone would be enough to make the paper unsuitable for BJPS

03.12.2011

Vladimir M. Agranovich
Editor, Physics Letters A

Re: Physics of uncertainty, the Gibbs paradox and indistinguishable particles

Dear Prof. Agranovich,

I have the pleasure to submit a manuscript entitled "Physics of uncertainty, the Gibbs paradox and indistinguishable particles" to be considered for publication in *Physics Letters A*.

I have not submitted any article before in your journal. I submitted an earlier version of the present article to *Physica A* and it was rejected, although it was found correct, because, according to the referee, it was found too philosophical. Therefore, I thought it made sense to submit it to a philosophical journal, *The British Journal for the Philosophy of Science*, where it was rejected again, although it was found to contain interesting insights, this time because it was found too physico-mathematical.

For your information I include in the following pages my rebuttal to the editorial decision in *Physica A* (which was not considered by its Editor), along with the review comments I received and my replies to them, as well as the rejection letter from *The British Journal for the Philosophy of Science*.

I hope you will find the manuscript acceptable for publication in your journal.

Sincerely,

Demetris Koutsoyiannis

Subject: Your Submission
From: "Vladimir Agranovich" <vladimir.agranovich@utdallas.edu>
Date: 13/12/2011 23:39
To: dk@itia.ntua.gr

Ms. Ref. No.: PLA-D-11-02965
Title: Physics of uncertainty, the Gibbs paradox and indistinguishable particles
Physics Letters A

Dear Dr.Koutsoyiannis,

Unfortunately, I reject your paper. Your paper is too long to be considered as a letter and it does not
achieve the level of urgency and does not contain the physical results which need an urgent publication in
Physical Journal of Letters.
The paper as regular submission has to be sent to another journal where the paper can indeed find the
reader interesting in your results.
The objective of Physics Letters A is to publish short articles containing NEW PHYSICAL RESULTS,
which could be interesting for a wide audience of readers. The manuscript does not satisfy this condition.

Sincerely,

Vladimir Agranovich

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& ΠΕΡΙΒΑΛΛΟΝΤΟΣ — & ENVIRONMENTAL ENGINEERING

ΔΡ Δ. ΚΟΥΤΣΟΓΙΑΝΝΗΣ, ΚΑΘΗΓΗΤΗΣ — DR D. KOUTSOYIANNIS, PROFESSOR

14.12.2011

Editor, *New Journal of Physics*

Re: Physics of uncertainty, the Gibbs paradox and indistinguishable particles

Dear Editor,

I have the pleasure to submit a manuscript entitled "Physics of uncertainty, the Gibbs paradox and indistinguishable particles" to be considered for publication in *New Journal of Physics*.

I have not submitted any article before in your journal. I submitted an earlier version of the present article to *Physica A* and it was rejected, although it was found correct, because, according to the referee, it was found too philosophical. Therefore, I thought it made sense to submit it to a philosophical journal, *The British Journal for the Philosophy of Science*, where it was rejected again, although it was found to contain interesting insights, this time because it was found too physico-mathematical. Next I submitted it to *Physics Letters A*, where it was again rejected because it was found too long and not having the appropriate level of urgency.

I believe that my paper is good, correct and novel. However, being a hydrological engineer by profession and having published my articles in water resources journals, I have failed in choosing a suitable journal to submit the present paper and I may have created inconvenience to editors. Having a nice experience with another IOP journal recently (*European Journal of Physics*) for another paper of mine, I looked at the scopes of other IOP journals and thought it may make sense to submit it to the *New Journal of Physics*.

For your information I include in the following pages my rebuttal to the editorial decision in *Physica A* (a rebuttal which was not considered by its Editor), along with the review comments I received and my replies to them, as well as the rejection letters from *The British Journal for the Philosophy of Science* and the *Physics Letters A*.

I hope you will find the manuscript acceptable for publication in your journal.

Sincerely,

Demetris Koutsoyiannis

Subject: Final decision on your article from New J. Phys. - NJP/416727/PAP/277471
From: njp@iop.org
Date: 20/12/2011 19:18
To: dk@itia.ntua.gr

Ref: NJP/416727/PAP/277471

Dear Professor Koutsoyiannis

TITLE: Physics of uncertainty, the Gibbs paradox and indistinguishable
particles
AUTHORS: Professor Demetris Koutsoyiannis

Your paper submitted to New Journal of Physics has now been considered by
the Editorial Board and the Board Member's report is attached.

I am sorry to tell you that the Board Member has recommended that your
paper should not be published in New Journal of Physics, for the reasons
given in the enclosed report. Your paper has therefore been withdrawn from
consideration.

I would like to thank you for your interest in New Journal of Physics.

Yours sincerely

Kryssa Roycroft and Joanna Bewley
Publishing Administrators
New Journal of Physics

NJP 2010 Impact Factor = 3.849

Publishing Team
Kryssa Roycroft and Joanna Bewley - Publishing Administrators
Dr Elena Belsole (on maternity leave) - Publisher
Dr Ceri-Wyn Thomas and Marric Stephens - Publishing Editors
Paul Fishman and Justin Clark - Production Editors
Dr Tim Smith - Senior Publisher

Contact Details
E-mail: njp@iop.org
Fax: +44 (0) 117 9200673

Editor's report

NJP is an Open Access journal which captures a broad readership of
specialists and non-specialists and for this reason we place a large
emphasis on work being of sufficient importance and accessibility to be of
interest to our readers. In this case, your paper has been preliminary
assessed by the editors and has been deemed not to be of sufficient broad
appeal to meet NJP's strict criteria. The editors have therefore taken a
decision that NJP is not the most appropriate outlet for the work and that
it would be in the authors interest to resubmit to a more specialist
journal.

****
This email (and attachments) are confidential and intended for the addressee(s) only. If you are not the
intended recipient please notify the sender,

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& ΠΕΡΙΒΑΛΛΟΝΤΟΣ   & ENVIRONMENTAL ENGINEERING

ΔΡ Δ. ΚΟΥΤΣΟΓΙΑΝΝΗΣ, ΚΑΘΗΓΗΤΗΣ   DR D. KOUTSOYIANNIS, PROFESSOR

23.12.2011

Editor, *Journal of Physics A: Mathematical and Theoretical*

Re: Physics of uncertainty, the Gibbs paradox and indistinguishable particles

Dear Editor,

I have the pleasure to submit a manuscript entitled "Physics of uncertainty, the Gibbs paradox and indistinguishable particles" to be considered for publication in *Journal of Physics A: Mathematical and Theoretical*.

I have not submitted any article before in your journal. I submitted an earlier version of the present article to *Physica A* and it was rejected, although it was found correct, because, according to the referee, it was found too philosophical. Therefore, I thought it made sense to submit it to a philosophical journal, *The British Journal for the Philosophy of Science*, where it was rejected again, although it was found to contain interesting insights, this time because it was found too physico-mathematical. Next I submitted it to *Physics Letters A*, where it was again rejected because it was found too long and not having the appropriate level of urgency. Last, I submitted it to the *New Journal of Physics* where it was rejected because it was found that that journal was not the most appropriate outlet for the work and that it would be better resubmitted to a more specialist journal.

As you see, I try not to be disappointed by rejections: for I believe that my paper is good, correct and novel. However, being a hydrological engineer by profession and having published my articles in water resources journals, I apparently have failed in choosing a suitable journal to submit the present paper and I may have created inconvenience to editors.

For your information I include in the following pages my rebuttal to the editorial decision in *Physica A* (a rebuttal which was not considered by its Editor), along with the review comments I received and my replies to them, as well as the rejection letters from *The British Journal for the Philosophy of Science*, the *Physics Letters A*, and the *New Journal of Physics*.

I hope you will find the manuscript acceptable for publication in your journal.

Sincerely,

Demetris Koutsoyiannis

✉ ΗΡΩΩΝ ΠΟΛΥΤΕΧΝΕΙΟΥ 5, 157 80 ΖΩΓΡΑΦΟΥ • HEROON POLYTECHNEIOU 5, GR-157 80 ZOGRAPHOU, GREECE
☎ +30 210 772 2831 🖷 +30 210 772 2832 • dk@itia.ntua.gr • http://www.hydro.ntua.gr/dk/

Subject: Final decision on your article from J. Phys. A: Math. Theor. - A/417965/PAP/277471
From: jphysa@iop.org
Date: 13/01/2012 14:56
To: dk@itia.ntua.gr

Ref: A/417965/PAP/277471

Dear Professor Koutsoyiannis

TITLE: Physics of uncertainty, the Gibbs paradox and indistinguishable
particles
AUTHORS: Professor Demetris Koutsoyiannis

Your paper submitted to Journal of Physics A: Mathematical and Theoretical
has now been considered by the Editorial Board and the Board Member's
report is attached.

I am sorry to tell you that the Board Member has recommended that your
paper should not be published in Journal of Physics A: Mathematical and
Theoretical, for the reasons given in the enclosed report. Your paper has
therefore been withdrawn from consideration.

I would like to thank you for your interest in Journal of Physics A:
Mathematical and Theoretical.

Yours sincerely

Emma Wright - Group Publishing Administrator
Daniel Heatley - Publishing Administrator
Journal of Physics A: Mathematical and Theoretical

Publishing Team

Rebecca Gillan - Publisher

Emma Wright - Group Publishing Administrator
Daniel Heatley - Publishing Administrator
Alex Haywood, Eimear O'Callaghan, Steven Brett and Eirini Messaritaki -
Publishing Editors
Amy Harvey and Heather McKenna - Production Editor

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Article under review for Journal of Physics A: Mathematical and Theoretical
Physics of uncertainty, the Gibbs paradox and indistinguishable particles -
Professor Demetris Koutsoyiannis
ID: A/417965/PAP
BOARD MEMBER'S REPORT
============================
The paper deals with well established ideas in Statistical physics
(entropy, Gibbs paradox and indistinguishable particles), to be found
in any textbook. As such the manuscript is not suited to a journal
dealing with research papers,
and that is presumably why it has been rejected from several such
journals. Instead a journal dedicated to physics

teaching such as American journals of Physics
or European Journal of Physics would be a more appropriate venue.

The manuscript should not be considered for Journal of Physics A.

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ **NATIONAL TECHNICAL UNIVERSITY OF ATHENS**

ΣΧΟΛΗ ΠΟΛΙΤΙΚΩΝ ΜΗΧΑΝΙΚΩΝ   SCHOOL OF CIVIL ENGINEERING
ΤΟΜΕΑΣ ΥΔΑΤΙΚΩΝ ΠΟΡΩΝ   DEPARTMENT OF WATER RESOURCES
& ΠΕΡΙΒΑΛΛΟΝΤΟΣ   & ENVIRONMENTAL ENGINEERING
ΔΡ Δ. ΚΟΥΤΣΟΓΙΑΝΝΗΣ, ΚΑΘΗΓΗΤΗΣ DR D. KOUTSOYIANNIS, PROFESSOR

14.01.2012

Editor, *European Journal of Physics*

Re: "Physics of uncertainty, the Gibbs paradox and indistinguishable particles"

Dear Editor,

I have the pleasure to submit the above referenced manuscript to be considered for publication in the *European Journal of Physics*.

I had a nice experience with your journal before—my paper entitled "Clausius-Clapeyron equation and saturation vapour pressure: simple theory reconciled with practice", has been accepted and just published (*European Journal of Physics*, 33 (2), 295–305, 2012). I hope you will find the present paper publishable, too.

For your information, I submitted an earlier version of the present article to a number of physics journals from which I received an equal number of rejections as follows:

(1) In *Physica A* it was rejected, although it was found correct, because, according to the referee, it was found too philosophical.

(2) Based on the first rejection, I thought it made sense to submit it to a philosophical journal, *The British Journal for the Philosophy of Science*, where it was rejected, although it was found to contain interesting insights, this time because it was found too physico-mathematical.

(3) In *Physics Letters A* it was rejected because it was found too long and not having the appropriate level of urgency.

(4) In the *New Journal of Physics* it was rejected because it was found that that journal was not the most appropriate outlet for the work and that it would be better resubmitted to a more specialist journal.

(5) Last, in the *Journal of Physics A: Mathematical and Theoretical* it was rejected because it "*deals with well established ideas in Statistical physics (entropy, Gibbs paradox and indistinguishable particles), to be found in any textbook*".

These justifications of rejection were surprising to me: for example, I thought that philosophical considerations are pertinent to fundamental scientific issues; I also thought that if a paper provides alternative views for "well established ideas" it could be novel and hence publishable. Anyhow, the Board Member's Report of the last rejection contained a suggestion to submit it to the *European Journal of Physics*, which I am following (preferring it over the alternative suggestion for the *American Journal of Physics*).

I include in the following pages my rebuttal to the first editorial decision (with replies to review comments), i.e. that of *Physica A*, the only one accompanied with a review of the paper (noting that the rebuttal was not considered by its Editor), as well as all other rejection letters.

I hope you will find the manuscript acceptable for publication in your journal.

Sincerely,

Demetris Koutsoyiannis

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Subject: Final decision on your article from Eur. J. Phys. - EJP/419944/PAP/277471
From: ejp@iop.org
Date: 18/01/2012 17:16
To: dk@itia.ntua.gr

Ref: EJP/419944/PAP/277471

Dear Professor Koutsoyiannis

TITLE: Physics of uncertainty the Gibbs paradox and indistinguishable
particles
AUTHORS: Professor Demetris Koutsoyiannis

Your paper submitted to European Journal of Physics has now been seen by
the editor-in-chief and his report is below.

I am sorry to tell you that the editor-in-chief has decided that your paper
should not be published in European Journal of Physics, for the reasons
given in the report. Your paper has therefore been withdrawn from
consideration.

I would like to thank you for your interest in European Journal of Physics.

Kind regards,

Jonathan Turner
Publishing Editor
European Journal of Physics

Publishing Team
Jonathan Turner - Publishing Editor
Benjamin Skuse - Production Editor

Contact Details
E-mail: ejp@iop.org
Fax: +44 (0) 117 9200653

Article under review for European Journal of Physics
Physics of uncertainty the Gibbs paradox and indistinguishable particles -
Professor Demetris Koutsoyiannis
ID: EJP/419944/PAP
EDITOR-IN-CHIEF'S REPORT
============================
This paper is quite controversial. Fundamental assumptions of statistical
physics, as applied to ideal gas, are questioned and replaced by
alternative
ones. I have nothing against questioning well established theories, quite
often

progress in science originates from such considerations. However, EJP is not an
appropriate place to publish controversial papers. The scope of EJP is to promote education, and considerations such as presented in this paper do not
contribute to excellence in physics education. I am sorry this paper has not
been accepted by some research journals, but I encourage the author to submit
the paper to a journal specializing in foundations of physics.

****

18.01.2012

Editor, *Central European Journal of Physics*

Re: "Physics of uncertainty, the Gibbs paradox and indistinguishable particles"

Dear Editor,

I have the pleasure to submit the above referenced manuscript to be considered for publication in the *Central European Journal of Physics*.

For your information, I submitted an earlier version of the present article to a number of physics journals from which I received an equal number of rejections as follows:

(1) In *Physica A* it was rejected, although it was found correct, because, according to the referee, it was found too philosophical.

(2) Based on the first rejection, I thought it made sense to submit it to a philosophical journal, *The British Journal for the Philosophy of Science*, where it was rejected, although it was found to contain interesting insights, this time because it was found too physico-mathematical.

(3) In *Physics Letters A* it was rejected because it was found too long and not having the appropriate level of urgency.

(4) In the *New Journal of Physics* it was rejected because it was found that that journal was not the most appropriate outlet for the work and that it would be better resubmitted to a more specialist journal.

(5) In the *Journal of Physics A: Mathematical and Theoretical* it was rejected because it "*deals with well established ideas in Statistical physics (entropy, Gibbs paradox and indistinguishable particles), to be found in any textbook*". The rejection was accompanied with a suggestion to submit it to the *European Journal of Physics* or the *American Journal of Physics*.

(6) Last, in the *European Journal of Physics* the Editor found that this Journal, whose scope is to promote education, is not an appropriate place for this paper. The Editor-In-Chief's Report contained the statement: "*I am sorry this paper has not been accepted by some research journals, but I encourage the author to submit the paper to a journal specializing in foundations of physics*".

Some of these justifications of rejection were surprising to me: for example, I thought that philosophical considerations are pertinent to fundamental scientific issues; I also thought that if a paper provides alternative views for "well established ideas" it could be novel and hence publishable.

I include in the following pages my rebuttal to the first editorial decision (with replies to review comments), i.e. that of *Physica A*, the only one accompanied with a review of the paper (noting that the rebuttal was not considered by its Editor), as well as all other rejection letters.

I hope you will find the manuscript acceptable for publication in your journal.

Sincerely,

Demetris Koutsoyiannis

Subject: Your submission to Central European Journal of Physics will not be considered
From: "Cent. Eur. J. Phys." <kmalarz@versita.com>
Date: 21/01/2012 14:07
To: "Demetris Koutsoyiannis" <dk@itia.ntua.gr>

Dear Prof. Demetris Koutsoyiannis,

I am sorry to inform you that your submission entitled "Physics of uncertainty, the Gibbs paradox and indistinguishable particles" will not be considered for publication in Central European Journal of Physics and will be removed. The article is not novel and informative enough to warrant publication in our journal. Unfortunately, due to a limited space for manuscripts to be published, our editorial selection criteria have become very strict and we can only accept the best manuscripts of those submitted.

Thank you for submitting your work to our journal.

Kind regards,

Krzysztof Malarz, PhD
Managing Editor
Central European Journal of Physics
http://versita.com/cejp/