THE UNIVERSITY OF CHICAGO
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Office of the Director

(312) 702-7823

May 25, 1989

Dr. Basilis Xanthopoulos
University of Crete
Physics Department
174 09 Iraklion, Crete
Greece

Dear Dr. Xanthopoulos:

It is my pleasure to invite you to join the Enrico Fermi Institute as a Visiting Scholar during the period July-August, 1989. This invitation is made upon the recommendation of Professor S. Chandrasekhar, who looks forward to carrying out research with you here at the Institute. By the terms of this appointment, your expenses would be paid on a perdiem basis from Professor Chandrasekhar's divisional grant.

As you know, the Enrico Fermi Institute is intended to bring together experimental and theoretical research in various areas of physics, geophysics astrophysics, and chemistry. We trust that you would both enjoy and add to the breadth of the science done here.

With best wishes.

Sincerely,

Dietrich Müller

Dietrich Müller
Director

המחלקה לפיסיקה
ת.ד. 653 – באר־שבע 84 105
טל. 664271

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הפקולטה למדעי הטבע
פרופ' **יעקב בקנשטיין**
הקטדרה לאסטרופיסיקה
ע"ש ג'אן ורוברט ה. ארנו
The Faculty of Natural Sciences
Prof. Jacob Bekenstein
The Joan and Robert H.Arnow
Chair in Astrophysics

אוניברסיטת
בן־גוריון
בנגב
BEN-GURION
UNIVERSITY
OF THE NEGEV

תאריך:/DATE 4/29/90

Prof. Basilis Xanthopoulos
Physics Department
University of Crete
714 09 Iraklion, Crete
Greece

Dear Prof. Xanthopoulos:

Having had the leisure to read your paper with Ferrari, I was impressed by how much progress you two have made in solving the hair-raising equations. I hope you will be able to finish the task of displaying a black hole with a massive meson field.

I meant to ask you a question regarding the field equation (10). Suppose I go over to a new field χ defined by

$$\chi = \int^{\varphi} B^2 \, (dA/d\varphi) \, d\varphi$$

Then the scalar equation (10) is

$$\nabla^2 \chi = 0$$

and pressumably the stress energy tensor can be written as one for the usual massless scalar field χ. So in what sense is the formalism developed from Kaluza-Klein broader than the usual theory for a massles scalar field ?

Sincerely,

Jacob D. Bekenstein

UNIVERSITY OF CRETE
Physics Department
714 09 Iraklion - Crete - Greece
Tel. (081) 236.589, 235.014
Telex 262728

May 15, 1990

Prof. Jacob Bekenstein
BEN-GURION UNIVERSITY
OF THE NEGEV
Physics Department
Beer-Sheva 84 105
P.O.B. 653
ISRAEL

Dear Prof. Bekenstein:

Thank you very much for your interest and your comments about my paper with V. Ferrari.

(i) You are absolutely right that we can impose the gauge condition $A^1B^2=1$, which is equivalent to redefining the scalar field. Then Eq.(10) will describe a massless scalar field. However, this theory is much more general than the usual massless scalar field associated with the energy-momentum tensor suitable for a minimally coupled or a conformal scalar field because the associated energy-momentum tensor will involve a free parameter of the scalar field. All these energy-momentum tensors are compatible with the same massless scalar wave equation $\nabla^2\phi=0$, and in this sense they describe different couplings compatible with the same scalar wave equation. For instance, in our notation $A=\exp\left[-\frac{2\phi}{\sqrt{6}}\right]$, $B=\exp\left[\frac{\phi}{\sqrt{6}}\right]$ describe a minimally coupled scalar field while $A=(1-\phi)/(1+\phi)$, $B=(1+\phi)$ describe a conformal scalar field.

(ii) How come equation (10), could be transformed to the massive Klein-Gordon equation (2)? To do this we impose the non-covariant condition (22) or (23), which is valid only for the particular static and spherically symmetric solutions we are considering. From Eq.(23) it is clear that this can be imposed when $A^1B^2\neq 1$. Thus, it seems, for the massless case we could impose $A^1B^2=1$, and the reductions are covariant. For the massive, we assume that $A^1B^2\neq 1$, and we impose a non-covariant condition. Of course, I am not very pleased with the non-covariant reduction and now we are considering the general massless case.

I hope I was able to clarify the question you have raised.

Sincerely yours,

Basilis Xanthopoulos

Basilis Xanthopoulos

HARVARD UNIVERSITY

OFFICE OF THE SECRETARY
17 QUINCY STREET

CAMBRIDGE, MASSACHUSETTS

June 30, 1980

SIR,

I beg to inform you on behalf of the University and the Dean of the Faculty of Arts and Sciences that you are appointed

Associate of the Harvard College Observatory

to serve from April 1 through June 30, 1980 subject to the Third Statute of the University (*overleaf*).

Your obedient servant,

Robert Sheridan

Secretary to the University

Basilis C. Xanthopoulos

STATUTE 3. Officers and Staff of the University

The President, and Officers of the University to whom the President shall have delegated authority, shall appoint persons to carry out the work of the University. These persons shall constitute two groups:

1. Officers of the University comprising the teaching and professional and administrative staff; and
2. Supporting Staff comprising the office, technical and service personnel.

In certain cases, as specified from time to time by the Corporation with the consent of the Overseers, appointments shall require the approval of the Corporation and the consent of the Overseers.

Professors and associate professors are appointed without express limitation of time unless otherwise specified. All other Officers are appointed for a specified term, or for terms of unspecified duration subject to the right of the University to fix at any time the term of such an appointment.

All Officers who hold teaching appointments, as defined from time to time by the Corporation with the consent of the Overseers, are subject to removal from such appointments by the Corporation only for grave misconduct or neglect of duty. Officers who hold professional or administrative appointments are subject to removal from such appointments by the Corporation for grave misconduct or whenever, in its opinion, their duties are not satisfactorily discharged.

Officers are subject to the following rules concerning retirement, and to other rules not inconsistent herewith from time to time in effect. Officers holding teaching appointments will ordinarily retire at the end of the academic year in which they reach the age of sixty-six, subject to such exceptions as may be approved by the Corporation. Officers holding professional or administrative appointments will retire at the end of the academic year in which they reach the age of sixty-six, except when authorized to continue by resolution of both Governing Boards, and in no event shall any such continuation extend beyond the completion of the academic year in which they reach the age of seventy. The Corporation may require the retirement of any Officer at any time because of ill health or disability which materially affects the performance of that Officer's duties.

The President shall establish policies setting forth the conditions of employment of the Supporting Staff.

The Corporation may from time to time with the consent of the Overseers adopt rules and procedures to carry out the purposes of this Statute.

MAX-PLANCK-INSTITUT FÜR PHYSIK UND ASTROPHYSIK
INSTITUT FÜR ASTROPHYSIK

Karl-Schwarzschild-Strasse 1 · 8046 Garching bei München · Telefon · 089 · 32990

Dr. B. Xanthopoulos
Astronomy Department
University of Thessaloniki
Thessaloniki
GRIECHENLAND

July 22, 1983

Dear Dr. Xanthopoulos,

We should like to invite you to participate in our "Workshop on Exact Solutions of Einstein's Equations" which will be held from 14 to 18 November 1983 at Retzbach near Würzburg, FRG.

The topics to be covered in this workshop include various methods for dealing with nonlinear differential equations like prolongation structures, the inverse scattering method, HKX-transformations, Lax pairs etc. Some of the new solutions of Einstein's equations discovered by those methods will be discussed. We also want to touch upon recent progress in radiative metrics and interior and cosmological solutions.

The workshop is intended to improve contacts between the various groups working in this field and to enhance the comprehension of methods used by other groups.

We have applied for financial support; the final decision is to be expected soon. But as the situation is now, we already can cover your expenses for lodge and board at Retzbach. A limited amount of support will probably be available for contributions towards travel expenses in cases of last resort; however we urge you to obtain travel funds from your local agency.

We should like to invite you to give a 40 min. talk on "Exact solutions for Yang Mills fields".

Further particulars, the programme etc., will be sent to you as soon as the information is available to us. We regret that it is already quite late, thus the response at your earliest convenience, in any case not later than 10 September, would be much appreciated.

Yours sincerely,

(C. Hoenselaers) (W. Dietz)

C. Hoenselaers
MAX-PLANCK-INSTITUT FÜR PHYSIK UND ASTROPHYSIK
INSTITUT FÜR ASTROPHYSIK
Karl-Schwarzschild-Strasse 1 · 8046 Garching bei München · Telefon · 089 · 32990

Dr. B. Xanthopoulos
Department of Physics
University of Crete
Herakleion, Crete
GRIECHENLAND

August 30, 1983

Dear Basilis,

recently I heard that you moved to Crete. Congratulations for the post.

I enclose a photocopy of a letter I sent earlier, just in case it didn't reach you.

Hoping to hear from you soon.

Yours

Basilis Xanthopoulos
UNIVERSITY OF CRETE
Physics Department
Iraklion Crete
Tel. (081) 236.589 - 235.014
Telex 262728
P. O. Box 470

September 9, 1983.

Dr. C. Hoenselaers
Max Planck Institut
8046 Garching bei München - Germany:

Dear Cornelius

Thank you very much for your invitation to participate in the "workshop on exact solutions of Einstein's Equations" and to deliver a talk on "Exact solutions for Yang Mills fields". I provisionally accept both.

"Provisionally" refers to finances. I am looking for travel support here but the chances seem very slim. Is there any chance of obtaining support from you? I do not want to delay further my reply, so I will write you back when I will have a definite reply from the Greeks.

I've moved to Crete, in Iraklion, last October. They start a new University here. Although I was born and grown in the northern part of Greece, I've liked it very much here. Please note my new phones: office 081-235014, home 081-235576.

Hoping that we will meet in November,

Yours Sincerely,

Basilis

December 10, 1989.

Dear Valeria:

Thank you very much for the FAX and all other messages by the various means of communication. I was quite occupied last week, so, I did not work much on our paper. My collaborator, Thomas Zannias was here, on a suddent visit. He is currently serving in the Greek army, so his leaves from the army and visits here can not be put into schedule.

I was surprised to see that you managed to work on our paper while Jesus was in Rome. I do not know much about the collision of the two null particles to comment whether it is wise to give up the problem or not.

I was really shocked to hear that Prof. Amaldi died, he looked so well a month ago, when I saw him in Rome. I sometimes envy such cases, if one is going to die in his eighties.

I have some more calculations, and results, on our general $5 \to 4$ projects. However, I am not sending them now, lets try to complete and submit the current paper before Christmas (this is mainly a remark for myself, not for you!).

About Christmas: With a fried of mine from

Rhodes we are talking of going to Cyprus, by boat, for 8-9 days. It is not certain yet, he would have the final word, since he has a family to take care as well. If the trip to Cyprus is not realized, I will be mainly in Iraklion, spending only a few days around Christmas and New Years Day with my sister in Chania.

Let me return to science now, and the questions you raised.

(1) As I recall, we had obtained naturally the Bekenstein solution (in my last days in Rome). We were considering the case $\delta = 1$, and we had determined the asymptotic behavior of $Q(r)$ from the asymptotic energy conditions, when Q was the ration of two polynomials of first degree, we had shown that there was no solution that satisfied the energy conditions everywhere. Next we tried Q to be the ratio of two polynomials of second degree and the only solution was the Bekenstein solution. We found $Q = \frac{(r+r_0)^2}{r(r-r_0)}$, which corresponds to $K = \frac{r}{r+r_0}$, $\Lambda = \frac{r+r_0}{r}$, i.e. the Bekenstein spacetime, although it was now associated with a massive Klein-Gordon field.

(I remember, I never kept detailed notes of this MACSYMA-aided calculation, did you? But I did keep the final result. Also, later that night I had excluded the possibility of Q being the ratio of two polynomials of the third degree, which could be possibly mentioned just in words). Having obtained $K = \frac{r}{r+r_0}$, $\Lambda = \frac{r+r_0}{r}$ by the requirement that the energy conditions are satisfied everywhere we could then give the coordinate transformation (page B.3 of my notes, $r = r_{Bek} - M$, $r_0 = M$) that maps it to the metric given by Eq. (5) in the introduction. At this point I suggest to mention that $r=0$ or $r_{Bek} = M$ is indeed a regular horizon on which, however, the scalar field, massless or massive, blows up (lets repeat it). I do not think that we should give the other curvature scalars for the Bekenstein solution. We only show that what we obtain from our general investigation and the energy conditions is isometric to the Bekenstein solution. Then we appeal to him for the conclusion that $r=0$ is a regular horizon.

(2) About the trace of the energy-momentum tensor of the Bekenstein solution. I do not think

that you should worry much. For instance, for the minimally coupled massless scalar $T = -(\nabla\phi)^2 \neq 0$, while for the conformally flat massless scalar $T = 0$. I do not see a correlation between masslessness and tracelessness, so, I would not make it an issue that the massive field is traceless. It is a peculiarity of the (horrible) associated energy-momentum tensor.

(3) I really do not know what to say about the stability of the Bekenstein solution when ϕ satisfies the massive equation. Just right one sentence without taking sides, as in politics.

(4) Talking with Zannias I was convinced that we should <u>not</u> take very seriously the energy conditions while considering scalar fields. I do not suggest to change anything in the present paper. But in the future we should be more open-minded and do not be so strick about all the energy conditions.

In the next pages I have some suggestions for section VI. Mainly I suggest some introduction before the consideration of the three cases for δ.

In section V we investigated the nature of the geometry at $r = r_0 > 0$, for all physically acceptable functions $Q = Q(r)$. Implicitly we assumed that

(i) $Q(r)$ has no roots or poles for $r = r_1 \neq r_0$

and that,

(ii) The expression in squared brackets in Eq. (56)

$$\mathcal{D} = 3\delta(r^2 + r_0^2) - 2rr_0(\delta^2 + 2) \qquad (101)$$

has no real, non negative roots,

and we reached the conclusion that

(α) Either $r = r_0$ is a curvature singularity or

(β) $r = r_0$ is regular but not a horizon, and the ~~geometry~~ scalar field diverges as a power law.

In this section we shall work out a few more examples, considering also cases in which $Q(r)$ could have roots or poles for $r = r_1 \neq r_0$, $r_1 \neq 0$, and $\mathcal{D}$ has roots in the physical domain as well.

The expression $\mathcal{D}$ has real roots provided that

$$4r_0^2(\delta+2)(\delta+1)(\delta-1)(\delta-2) \geq 0 .$$

Provided that they are real, the roots will be positive if $\delta > 0$. By taking into account the permitted range of δ given by the expression (53) we find that $\mathcal{D}$ has real positive roots if and only if

$$0 < \delta \leq 1 . \qquad (102)$$

For $\delta = 1$, $r = r_0$ is a double root.

For $0 < \delta < 1$, the roots r_1, r_2 satisfy $0 < r_1 < r_0 < r_2$.

The two roots are

$$r_i = \frac{r_0}{3\delta}\left[\delta^2 + 2 + (-1)^i\sqrt{\delta^4 - 5\delta^2 + 4}\right], \quad i=1,2. \tag{103}$$

(i) ~~Take~~ Case $\delta = 0$.

Equation (56) gives

$$C^{abcd}C_{abcd} = \frac{256\, r_0^4 r^8 Q^4}{3(r+r_0)^{16}}. \tag{104}$$

Lets assume that

$$Q = \frac{1}{r^n}\left[r^n + a_{n-1}r^{n-1} + \cdots + a_0\right] \tag{105}$$

It is apparent that for $n>2$, the invariant (104) will be singular for $r=0$. So, we shall consider the "critical" ~~case~~ choice $n=2$. It is straightforward to find that the only choice which will satisfy all the energy conditions asymptotically is

$$Q = \frac{1}{r^2}\left[r^2 + 4r_0 r + (\epsilon+7)r_0^2\right], \quad \frac{1}{3} \le \epsilon \le 1. \tag{106}$$

However, the resulting solution exhibits a curvature singularity at $r=0$, as it can be verified by examining, for instance, the scalar curvature, which is unbounded for $r=0$. In addition, for the choice (106) and for all possible values of r_0 and ϵ, the energy density ρ becomes negative in some regions of the spacetime (although it is positive asymptotically).

Case $\delta = 1$.

Now

$$K = \frac{r+r_0}{r-r_0}\cdot\frac{1}{Q}\,, \qquad \Lambda = \frac{(r+r_0)^3}{r^2(r-r_0)}\,\frac{1}{Q}\,,$$

$$C^{abcd}C_{abcd} = \frac{16\,Q^4 r_0^2 r^6 (r-r_0)^4}{3\,(r+r_0)^{16}}\,. \tag{107}$$

The critical behavior for Q is $Q \sim (r-r_0)^{-1}$. If we choose $Q = (r+k)/(r-r_0)$, $k>0$ (so that no additional "interesting" surfaces are introduced) we find that the energy conditions could not be satisfied throughout the spacetime.

If we assume that Q is the ratio of two polynomials of second degree such that $r=r_0$ is a simple pole we are forced (from the energy conditions) to consider

$$Q = \frac{(r+r_0)^2}{r(r-r_0)}\,. \tag{108}$$

Then

$$K = \Lambda^{-1} = \frac{r}{r+r_0} \tag{109}$$

and the resulting geometry

$$ds^2 = -\frac{r^2}{(r+r_0)^2}(dt)^2 + \frac{(r+r_0)^2}{r^2}\left[(dr)^2 + r^2(d\theta)^2 + r^2\sin^2\theta\,(d\varphi)^2\right] \tag{110}$$

is isometric to the Bekenstein spacetime given by the first of Eqs. (5). (Change $r \to r-m$, $r_0 \to m$, where left-hand-side refers to the variables

of Eq. (110) and the right-hand-side to the variables of Eq. (5)). In the expression (110), $r=0$ is the (regular) horizon of the Bekenstein solution. The energy density and the pressures are given by

$$\rho = -P_1 = P_2 = P_3 = \frac{r_0^2}{(r+r_0)^4}\,, \qquad (111)$$

which satisfy all the energy conditions throughout the spacetime.

Next your comments that now it is a massive field. One correction. ~~For the minimally coupled scalar field,~~ Bekenstein's solution it is ~~$T_{\mu\nu}=$~~ not minimally coupled, it is a conformal scalar field with $T_{\mu\nu}$ given by Equation (3). Also, for the minimally coupled it is

$$T_{\mu\nu} = (\nabla_\mu\phi)(\nabla_\nu\phi) - \frac{1}{2} g_{\mu\nu} (\nabla\phi)^2 .$$

But I do not think that the minimally coupled scalar field should be mentioned here.

Valeria: I am sending there by FAX today, although I have not completed the analysis for $0 < \delta < 1$.

Please, take care of your mother first.

Yours,

Basilis.

(iii) $0 < \delta < 1$.

The "square of the Weyl tensor" curvature invariant behaves like

$$C^{abcd} C_{abcd} \sim Q^4 (r-r_1)^2 (r-r_2)^2.$$

It is suggestive, therefore, to choose

$$Q = (r-r_i)^{-1/2} Q_i(r)$$

where $Q_i(r)$ is smooth at $r=r_i$. We shall assume that $Q_i(r)$ does not vanish at $r=r_i$, so that $K^2 \sim (r-r_i)$ vanishes smoothly at $r=r_i$.

We have

$$K = \left(\frac{r-r_0}{r+r_0}\right)^{\delta-2} \frac{(r-r_i)^{1/2}}{Q_i(r)}, \quad \Omega = \frac{(r+r_0)^3}{r^2(r-r_0)} \frac{(r-r_i)^{1/2}}{Q_i(r)}$$

where $Q_i \sim r^{1/2}$ asymptotically. We have considered $Q_i = r^{1/2}$ and $Q_i = (r+r_i)^{1/2}$, and in both cases $r=r_i$ is in fact a curvature singularity (the scalar curvature R becomes infinite).

(iv) $r_0 = 0$

Now $K = \Lambda = \frac{1}{Q}$, so the resulting solution is conformally flat. For the general smooth Q, the scalar curvature diverges like $R \sim r^{-1}$. To eliminate this ~~divergent~~ singular behavior, we need to choose $Q\dot{Q} \sim r$. We have worked out three different choices, namely

$$Q = \frac{r}{r+a^2} \tag{121a}$$

$$Q = \frac{r^2}{(r+a^2)(r+b^2)} \tag{121b}$$

$$Q = \frac{r}{[(r+a^2)(r+b^2)]^{1/2}} \tag{121c}$$

where $a > 0$, $b > 0$. For all three choices, all four curvature scalars listed in Eq. (56) are finite at $r = 0$, which, however, is not a horizon. In addition, for no choice of a and b all the energy conditions are satisfied throughout the spacetime.

MAX-PLANCK-INSTITUT FÜR PHYSIK UND ASTROPHYSIK

INSTITUT FÜR ASTROPHYSIK

Dr. Martin Walker

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June 19, 1979

Dr. Basilis Xanthopoulos
Department of Physics
Syracuse University
Syracuse N.Y. 13210
U S A

Dear Dr. Xanthopoulos,

Jürgen Ehlers, Bernd Schmidt and I have just been discussing the guest program of the relativity group at the MPI for Astrophysics for next year, 1980. We wondered whether you would be interested in visiting us here for an extended period, up to six months, say. The first half of 1980 would be slightly more convenient for us, but your visit could extend into the second half. As you probably know, GR9 will be in Jena, East Germany, at the end of June.

In addition to the three of us mentioned above, Reinhard Breuer, Demetrios Christodoulou, Ruprecht Schattner and Michael Streubel are also in the group. The main interests of the group are in classical gravitational theory, some of them being: asymptotics (Schmidt, Walker, Streubel), (rigorous, global approximation methods (Ehlers, Christodoulou, Schmidt, Walker), description of extended bodies (Ehlers, Schattner), radiation and radiation-reaction (all of us).

If you are interested, please fill out the questionnaire enclosed, since we have to submit it together with the request for funds.

I look forward to hearing from you.

Yours sincerely,

Martin Walker

msu

DEPARTMENT OF PHYSICS

COLLEGE OF LETTERS & SCIENCE MONTANA STATE UNIVERSITY, BOZEMAN 59715

May 17, 1978

Mr. Basilis Xanthopoulos
The Enrico Fermi Institute
The University of Chicago
5630 Ellis Avenue
Chicago, Illinois 60637

Dear Mr. Xanthopoulos:

We are pleased to offer you a position as a Visiting Assistant Professor. Your appointment will begin September 1, 1978, for a 10 month period at a salary of $13,000 for the academic year. Your teaching load will be three quarters of Electrodynamics taught out of the book by Jackson and one quarter of an undergraduate mathematical physics course.

This teaching load should allow you time to interact with Bill Kinnersley on problems of common interest in relativity.

Additional information can be obtained by calling me. A written reply would be appreciated by May 26.

Sincerely yours,

Robert J. Swenson

Robert J. Swenson, Chairman
Department of Physics

RJS:hk

TELEPHONE (406) 994-3614

nature

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London WC2R 3LF
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In reply please quote:
C08435 PC/JAC

8 October 1984

Dr S Chandrasekhar
Lab for Astrophysics &
Space Research
University of Chicago
Enrico Fermi Institute
933 East 56th Street
Chicago IL 60637

Dear Dr Chandrasekhar

Your manuscript "On colliding waves in the Einstein-Maxwell theory" has now been assessed by two reviewers whose comments I enclose. In principle we are prepared to publish this paper but must ask that it be revised partly to accommodate the points raised and also to conform to our house style.

Your paper will be published as a Letter. The first paragraph of Nature Letters, printed in bold, is not meant to represent an abstract but, rather, should outline the context and principle results of the work so that any reader of Nature has an impression of why the work is interesting and what it achieves. The subsequent text should then lead on without repetition of introductory material.

As far as the reviewers comments are concerned, I leave it to you to judge how far you should go with extra references - though some of them do appear to be relevant. But perhaps only the most recent of the first four suggested by the reviewer need be referenced for purposes of economy.

Finally, the scope of this paper is fairly specialized. "Outsiders" who will find it interesting would benefit from a final paragraph that outlines the most general significance or implications of this solution and others like it.

Please supply two copies of the revised version, one with changes clearly indicated. I hope to hear from you within four weeks. If the delay will be longer please let me know.

Yours sincerely

Dr Philip Campbell
Physical Sciences Editor

Registered No: 939565 England Registered Office: Macmillan Journals Ltd, 4 Little Essex Street London WC2R 3LF

From the office of
S. CHANDRASEKHAR

Dec. 20, 1984

Basilis:

I hope that you won't really care if the Letter should not be published: the publication of the Letter as editorially mangled is insulting. Besides our paper has been accepted by the R.S. with an enthusiastic referee's report. Roger Penrose (whom I met in London) was enthusiastic about the paper. Incidentally, he does not agree that the space-time can be extended beyond regions II + III - globally at any rate. X-mas greetings

Chandra

THE UNIVERSITY OF CHICAGO
THE ENRICO FERMI INSTITUTE
933 EAST 56TH STREET
CHICAGO · ILLINOIS 60637
AREA CODE 312-962-7839

Laboratory for Astrophysics and Space Research

December 20, 1984

Dr. John Maddox
Editor,
NATURE
4 Little Essex Street
LONDON WC2R 3LF

Dear Dr. Maddox,

Last August I submitted to you a Letter "On Colliding Waves in the Einstein-Maxwell Theory" for publication in Nature. I was later informed, while I was in London late in November, that the Letter had been accepted for publication. (I had not seen the earlier correspondence regarding referee's reports since I was abroad; and they were attended to by my collaborator, Dr. Xanthopoulos.)

The enclosed proofs of the Letter arrived earlier this week. And I have been horrified to find that the manuscript has been changed beyond recognition by someone in your office: hardly a sentence of the original manuscript has survived and the rewriting is grossly in error in several places. As a rule when I have submitted papers for publication during the past thirty or more years, I have always stipulated that no editorial changes be made without my express approval. I am sorry I did not add this stipulation when I communicated this Letter. But I hardly expected that the manuscript would be mangled and distorted to the extent it has been. I am afraid that under these circumstances I must insist that either the Letter be published exactly as submitted (with the minimum of editorial changes that I must approve) or that I be allowed to withdraw the Letter unconditionally.

I am sorry that I am so intransigent.

Yours sincerely,

S. Chandrasekhar

S. Chandrasekhar

p.s.: I am glad that I had the opportunity to meet you even if only briefly at the Awards dinner of the Royal Society.

enclosure : proofs and original manuscript

cc: B. Xanthopoulos

nature

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In reply please quote: CO8435R PC/RFG

19 November 1984

Dear Dr Xanthopoulos

We are happy to say that your manuscript "On colliding waves in the Einstein-Maxwell theory"

has been accepted for publication.

Before the manuscript is sent to the printers, we shall make any detailed changes in the text that may be necessary either to make it conform with house style or to make it intelligible to a wider readership. If the changes are extensive, we shall ask your approval before type is set, but in any case please read proofs with great care to make sure that the sense has not been altered.

We look particularly carefully at the titles of all letters to ensure that indexing will be done accurately and that titles are not unreasonably long.

Acceptance is conditional on the manuscript's not being published elsewhere and on there being no announcement of this work to newspapers, magazines, radio or television until the publication date in Nature.

An order form for reprints will be sent with the proofs.

Yours sincerely,

Dr Philip Campbell
Physical Sciences Editor

Registered No: 939565 England Registered Office: Macmillan Journals Ltd, 4 Little Essex Street London WC2R 3LF

SYRACUSE UNIVERSITY
DEPARTMENT OF PHYSICS
201 PHYSICS BUILDING | SYRACUSE, NEW YORK 13210

May 1, 1979

Dr. Basilis Xanthopoulos
Department of Physics
Montana State University
Bozeman, Montana 59715

Dear Dr. Xanthopoulos:

The purpose of this communication is to offer you formally an appointment as Research Associate in our relativity group for the academic year 1979-80, at a monthly salary of $1,000, the starting date to be sometime between July 1 and October 1, 1979 at your convenience. Though we understand that in all probability you will move on by the end of the year, we intend that the commitment of the University be for a full twelve months, in case your plans should change. In that event you would also be eligible for a second-year appointment under similar conditions for 1980-81 if funds are available.

Though nominally you will work under our supervision, all doctorate appointees have, of course, complete scientific freedom to follow their interests in research, in your case in general relativity and related fields. We should hope that you will have close contacts with members of our Department of Physics, through seminars and otherwise, for the purpose of mutual stimulation. You may also find that several members of the Syracuse University Department of Mathematics work on problems in topology and differential geometry of interest to you. We think that you will also find the location of the University convenient for maintaining contacts with research groups located elsewhere.

Though this offer of appointment commits the University to a definite minimum term of employment, it is our policy to release research associates at any time if they request so for personal or professional reasons. In such an event a few weeks notice ahead of time will be appreciated by the authorities of the University.

As a Research Associate you will be considered a member of the Department. You will be covered automatically by group life insurance and by dismemberment insurance, each in the amount of $3,000, both paid for by the University. You are eligible to take out additional group life insurance at favorable rates, and also group major medical insurance. The details of these schemes you can ascertain later on, if you decide to come. All members of the University staff have social security taxes withheld, along with federal and state income taxes.

If you have any questions concerning professional arrangements or concerning living conditions, please let us know, and we shall try to furnish information, and later to give you some help in locating living quarters if desired.

We hope that you will give this offer of appointment your serious consideration and that you will decide to accept it. We certainly look forward to having you join our group in the near future and hope that your stay here will prove mutually beneficial. If everything appears satisfactory, we should like to ask you to indicate your acceptance by signing the enclosed copy of this letter and returning it to us.

Sincerely yours,

Peter G. Bergmann

Peter G. Bergmann
Professor of Physics

Joshua N. Goldberg

Joshua N. Goldberg
Professor of Physics

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5630 ELLIS AVENUE
AREA CODE 312, 753-8611

Office of the Director

22 May 1980

Professor Basilis Xanthopoulos
Department of Physics
University of Thessaloniki
Thessaloniki
Greece

Dear Professor Xanthopoulos:

It is with great pleasure that, upon the recommendation of Professor Chandrasekhar and the faculty of the Enrico Fermi Institute, I invite you to accept the position as Visiting Scholar in the Enrico Fermi Institute during your stay in July and August 1980.

This appointment will entitle you to the privileges of an academic member of the Institute. Your salary will be derived from Professor Chandrasekhar's grant.

If there are any problems connected with your visit which we could help you solve, please feel free to contact me.

I wish you a very successful stay at Chicago. Unfortunately, I will not have the opportunity to see you since I will be spending the summer in Europe.

Sincerely yours,

Peter Meyer
Director

/me

cc: S. Chandrasekhar
A. V. Crewe, Dean