Advances in Exploration of Dark Energy

Modern Physics and Christian Faith

Friedhelm M. Jöge*
Schulstrasse 57 · D-31812 Bad Pyrmont · Germany

Abstract: The present conference lecture provides a theory of dark energy that appears to have been developed in two complementary ways. On the one hand, this theory is based on physics and mathematics and, on the other hand, it is developed on the basis of available data. This corresponds to the discovery of the laws of planetary motion in elliptical planetary orbits by JOHANNES KEPLER in the past. He developed his laws from a large amount of data. Later it was theoretically sustaintiated more thoroughly by I SAAK NEWTON . The focus is on deriving a formula for the equivalence of energy and time (1), page 2. Precursors to the presented „Theory of Dark Energy“ were published in the articles [1-11].

The derivation of the formula for the equivalence of energy and time provides new theoretical insights and applications in theoretical terms. These are listed in „Application“ sector.

The derivation leads to the discovery of a new law of nature. This is explained in section „Conclusion“.

A formula for calculating dark energy was developed in a previous article published in the International Journal of Physics and Astronomy [1]. It is:

$$Ed = (h/tp^2) \cdot tu \qquad (1.2)$$

***Keywords*:** Dark Energy, PLANCK time, Law of Nature, Age of the Universe, Fundamental Oscillations of a Cosmic Space, Theoretical Physics, Cosmology.

Advances in Exploration of Dark Energy
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Friedhelm Manfred Jöge, Dipl.-Ing. (FH)

I. Introduction

This lecture provides contributions about dark energy and leads to a discovery of a new law of nature. Following aspects will be shown:

– contributions about the nature of time

– the current state of knowledge about the relationship between faith and science

– natural laws from a biblical perspective

The focus of my topic is on deriving a formula that expresses the „Equivalence of Energy and Time“ or „Equivalence of Dark Energy and age of the universe“.

However, applications of the formula, I will show you, could be made to answer open questions in theoretical physics and give concrete examples of such applications.

II. Biography

· Friedhelm Manfred Jöge, born in 1943, worked in a scientific laboratory after studying chemical and mathematical textbooks at a young age and
after studying chemical engineering at the Nuremburg University of Applied Sciences,

·1966 Diploma (FH) Chem.

He then worked in development departments in the chemical and pharmaceutical industries

· Employment at Bayer AG as chemical engineer in the fields of

macromolecular chemistry and employment in other organisations

working in the fields of biochemistry, medical studies and pharmacy

· Employment in the Institute of Solar Energy Research (ISFH) in the field of optimization of microcrystalline silicon surfaces and electron microscopic images (REM)

· 2010 Starting with research in Dark Energy

The focus of his work was in the field of biochemistry and macromolecular chemistry
His interest are the synopsis of various physical, chemical and biological knowledge as well as questions of origin and ethics in the field of tension between faith and science. In particular, he dealt with the concept of information.
He is married, has a daughter and three Grandchildren. He loves music and chess.

His most important contributions to scientific are articles:

1. Quantum Gravity
2. Theory of Dark Energy
3. Calculation of Dark Energy and Dark Matter
4. Equivalence of Energy and Time
5. Time is Energy and Dynamic Information
6. Information & Effect: An Introduction to the Concept of Immanence as a Physical Quantity

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III. Theory of Dark Energy

The presented article provides a theory of dark energy that appears to have been developed in two complementary ways. On the one hand, this theory is based on physics and mathematics and, on the other hand, it is developed on the basis of available data.

A formula for calculating dark energy was developed in a previous article published in the International Journal of Physics and Astronomy [1].

$$Ed = (h/tp^2) \cdot tu \qquad (1.2)$$

Ed = dark energy
tu = age of the universe
h = PLANCK's quantum of action
tp = PLANCK time, represents an oscillation period τ

The development of formula (1.2) is based on a single idea; namely the question:

„What kind of energy is it when you devide PLANCK's quantum of action by PLANCK time"?

The derivation of formula (1), page 2 for the „Equivalence of Energy and Time" [3] requires only the assumptions that the PLANCK time tp is an oscillation period τ and dark energy satisfies the PLANCK / EINSTEIN formula

$$E = h \cdot v$$

Oscillations are fundamental oscillations of a cosmic space [4 pg.15].
THOMAS GÖRNITZ says:
„Sructural quanta emerge from a quantum-theoretical description of „oscillation states" of a system around its ground state. They produce many effects. The AQIs of protyposis are also structural quanta and not particles. One can interpret them as the „fundamental oscillations of the cosmic space".

First way

IV. PHYSICAL-MATHEMATICAL AND THEORETICAL DERIVATION

For the equivalence of energy and time leads to:

With $v = 1/\tau$, you get

$$E = h/\tau$$

With $\tau = tp$, you get

$$pE = h/tp$$ for Energy in PLANCK time

$$1E = (h/tp2)$$ for Energy in 1 s

$$E = (h/tp2) \cdot t \quad (1)$$ *Equivalence of Energy and Time*

For the age of the universe tu , you get

$$Ed = (h/tp2) \cdot tu \quad (2)$$ *Equivalence of dark Energy and age of the universe*

Second way

V. DERIVATION WITH DATA

In my article „Calculation of Dark Energy and Dark Matter“ [1] you can find on page 2 the derived formula:

$$EM = c^5 / (8^{1/2} \, G \, Ho) = 5.61 \cdot 10^{69} \, J \quad (2.1)$$

This formula did emerge from the BEKENSTEIN HAWKING entropy and the HAWKING temperature, see my article [1], pg.2.

In formula (1.2): $(h/tp2)$ is $= 2.2802 \cdot 1053 \, Js\text{-}1$ (a)

$$Ed = 5.61 \cdot 1069 \, J \cdot 70 / 4 = 0.982 \cdot 1071 \, J$$

With $tu = 4.3056 \cdot 10^{17}$ s , you get

$$Ed/tu = 0.982 \cdot 10^{71} \, J / 4.3056 \cdot 10^{17} \, s = 2.2807 \cdot 10^{53} \, Js^{-1} \quad (b)$$

The numerical values calculated using formulas (a) and (b) correspond to a high degree.

This means that formula (1.2) is validated and correct. It should be acknowledged as a law of nature, so as KEPLER's laws of planetary orbit descriptions have been confirmed and acknowledged as correct from the large amounts of data available.

The available data has been published by the MAX PLANCK Institute for

Radio Astronomy.

VI. APPLICATION

Applications of the formula (1.2) as natural law for experimental research or practical applications have not jet been carried out. The reasons for this are: dark energy is not yet experimentally accessible. In addition, dark energy cannot be observed directly and is diffusely distributed throughout the universe and is therefore not easy to detected.

Future research fields

However, applications of formula (1.2) could be made to answer open questions in
Theoretical Physics and give concrete examples of such applications:
The following publications show how formula (1.2) can be used to answer open questions and give concrete examples of such applications.
In addition to four applications previously described in the article „Time is quantized“ [5], „The Unverse -an Open System“]6], „Dark Energy is not constant“ [7], „Equivalence of Information and Squared Energy“ [8] the present article „Theory of Dark Energy“ also contains an application of formula (1.2). The statement of Prof. Dr. Alexandre Tkatchenko from the University of Luxemburg also contains a possible application of formula (1.2). The application in the present article „Theory of Dark Energy“ should be highlighted.
The possible application in this case consists in that what Prof. Dr. Alexandre Tkatchenko says:
„Accurate calculating the value of Dark Energy could be helps bring together two of the largest fields in physics: Quantum Field Theory (QFT) and the General Relativity Theory (ART) developed by ALBERT EINSTEIN.

Since the dark energy is relative [9] and dark energy is not constant [7], the energy on Earth is different than the energy at the edge of the universe. What this means for the development of theuniverse from Big Bang to today must be researched. That doesn't matter for the Earth, but whether the linear function of dark energy depending onthe age of the universe (see diagram [7]) is still valid and the exact calculation of dark

energy is still correct must be reconsidered.

Another application of the formula (1.2) , which was already mentioned in „Application“ section, is given by Prof. Dr. Alexandre Tkatchenko from the University Luxemburg.

Research into possible interdisciplinary applications of formula (1.2) could, for example, be applied in areas outside of physics, such as in cosmology or in the interdisciplinary modeling of physical systems, in future research.

Expanding the possible scope of application could open up exciting further research.
avenues for

Quantum Gravity
To Unification of Quantum Field Theory (QFT) and

General Relativity Theory (ART)

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Dark Energy of Cosmic Time Scale

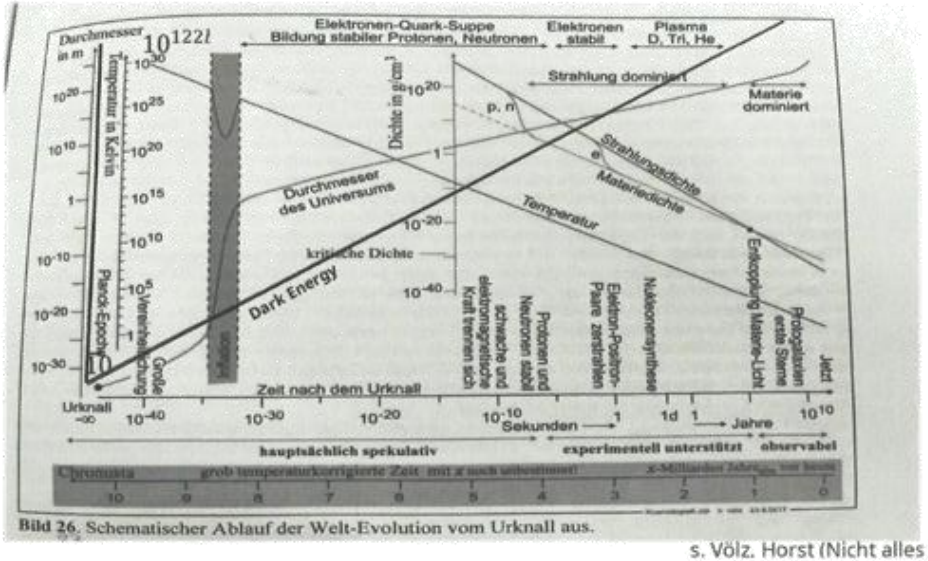

Bild 26. Schematischer Ablauf der Welt-Evolution vom Urknall aus.

s. Völz. Horst (Nicht alles ist Information). P. 37

VII. CONCLUSION

The formula (1.2) is theoretically justified and validated based on available data.

It should be acknowledged as a natural law. „KEPLER's“ laws of planetary motion were theoretically founded by ISAAK NEWTON („NEWTON's“ law of gravity), which he discoverd and which represents a law of nature. The situation is similar when generalizing the formula for the „Equivalence of Dark Energy to the age of the universe“ to the „Equivalence of Energy and Time“ [3]. That is, when I say in all modesty: „This formula also represents a law of nature“.

The article „Calculation of Dark Energy and Dark Matter“ [1] was the first to accurately calculate the value of Dark Energy. Accurate calculating of this value could help bring together two of the largest fields in physics. Quantum Field Theory (QFT) and the General Relativity Theory (ART), developed by ALBERT EINSTEIN. That's what Prof. Dr. Alexandre Tkatchenko says. This is also a possible application.

Definition of symbolsused in formulas

E = Energy
Ed = dark Energy
EM = Energy equivalent of visible baryonic matter
tu = age of the universe = 13.75 billion years with 1 year = 365.2422 days (Google)
tp = PLANCK time
h = PLANK's quantum of action G = constant of gravity
Ho = HUBBLE's constant v = frequency
τ = period of scillation

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Wiener: "*Information is information, neither matter or energy. No materialism that does not take this into account can survive today*".

Holger Lyre: "It's remarkable that from the perspective of the Ur-theory, exactly the opposite, materialism cannot survive precisely because matter and energy must be identified with information."

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Anton Zeilinger from the Institute for Quantum Information in Vienna:

„Information and reality are one and the same with the same medal.“

Now reality is not a concept of physics, but reality could be understand as a single effect (energy sign time) or as the sum of all effects.

There are also physical-mathematical proofs that matter and energy must be identified with information. So there are the formulas:

$$E = h \cdot \ln 2 \cdot H/t \qquad (1)$$

E = Energy
A = Action, Effect
H = SHANNON's Information Entropy
H/t = Information flow
t = time
h = PLANCK's quantum of action
k = BOLTZMANN's constant

respectively

$$A = h \cdot \ln 2 \cdot H \qquad (2)$$

Formula (1) was published by LIENHARD PAGEL in his book „Information is Energy (meaning „Dynamic Information“ = Information flow) [2] and HARTMUT ISING [3] under the title „Information and Energy“.

I also derived and validated formula (2) from DE BROGLIE's formula [4]:

$$A/h = S/k \qquad (3)$$

where

$$S = k \cdot \ln 2 \cdot H \qquad (4)$$

It is known through the Holy Scripture, the Bible, that this happened through God's speaking:
„He spoke and it came to pass … they stood there“ (Isaiah 48:13).

Formula (1) can make a contribution to this. The moment God spoke, he brought energy into the world through this flow of information. He also 12 cntinually maintains this world through his speaking. Physics and mathematics therefore provide a very good foundation for the credibility of the Bible's statements. Jeremiah 23:29 says: „The Word of God is like a hammer that breaks the rock. There is also a reference in the Gospel of John 1:1-3 (In the beginning was the Word) that matter also emerged from God's Word (verse 3).
Although physicists have also-called „Standard Model of Physics“ that is support to explain the emerge of the entire universe, they do not know where the energy came

from and how the energy came into existence. Christians know from the Holy

Scripture, the Bible, that this happened through God's speaking.

The Gospel of John 1:14 says: „And the Word became flesh … „ (Word is certainly Information and flesh is certainly matter, even if that is to be understand more spiritually).Many characteristics of matter that have been found andcontinue to be found can be identified with information.

Compatible View of Information and Natural Laws from a Scientific and Biblical Perspective

Proposed definition of Informatioin

A general proposal for a definition of information in compact terms that could be valid for all scientific disciplines in the age of language confusion in relation to the concept of information would be:

„Information is the composition of an ensemble of symbols of a certain sequence“

(Friedhelm Manfred Jöge)

This definition includes all essential aspects of the concept of information such as statistics, syntax,semantics and pragmatics. The formulation „certain sequence“ refers to semantis and, inextricably linked with that, to pragmatics (*semanto- pragmatics*). Likewise, the phrase „composition of an ensemble“ refers to statistics, where the terms „probability of a composition“ and „canonical ensemble“ are used.

The statistics is useful for the formulation of physical-mathematical formulations.

Principle of Information Formation statistics

„Information can only be generatrd through intelligence“

(Werner Gitt)

References

[1] Lyre, Holger: Quantentheorie der Information: Zur Naturphilosophie der Theorie Ur-Alternativen und einer abstracten Theorie der Information / Mit einem Geleitwort von Carl Friedrich von Weizsäcker.
Wien; New York; Springer 1998, ISBN 3-211-83204-1
[2] Pagel, Lienhard: Information ist Energie. Definition eines physikalisch begründeten Informationsbegriffs. Wiesbaden: Springer Vieweg / Springer Fachmedien, 2013.
[3] Ising, Hartmut: Information and Energy. https://doi.org/10.6084/m9.figshare.18865316.v2
[4] Jöge, Friedhelm: Information und Wirkung: Zur Einführung des Immanenzbegriffs als physikalische Größe.
Grenzgebiete der Wissenschaft (GW) 64 (December 2015) 3, 215-228
[5] Jöge, Friedhelm: Information & Effect: An Introduction to the Concept of Immanence as a Physical Quantity.
Journal of Modern and Applied Physics, June 2023, Vol. 6, Issue 2
Journal of Space Exploration 20-sept-2023, Vol. 13, Issue 1
Scientific GOD Journal December 2018, Volume 9, Issue 8, pp. 598-613
[6] Jöge, F.M.: Time is Energy and Dynamic Information.
Advances in Theoretical & Computational Physics, 2024, Sep 10, Volume 7, Issue 3, pp.1-2
[7] JÖGE, Friedhelm: Information und Wirkung – Beitrag zur Einführung des Immanenzbegriffs als physikalische Größe. Eine naturwissenschaftlich-philosophische und erkenntnistheoretische Betrachtung. ISBN 978-3-8280-2968-2, 1. Auflage 2011, © Frieling-Verlag Berlin, page 14

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References

GITT, WERNER: Information-Der Schlüssel zum Leben: NGI-4, pg. 182, CLV, Bielefeld (216)
ISBN: 978-3-86699-347-1

GITT, WERNER: Vier Naturgesetze der Information: NGI-4. pg. 89,
Bruderhand-Medien Wienhausen (2022), ISBN: 978-3-944337-21-0

JÖGE, F.M.: On the Current State of Knowledge about Relationship Between Faith and Science.
Biomedical Journal of Scientific & Technical Research, pp.2323-2324

JÖGE, F.M.: Information & Effect: An Introduction to the Concept of Immanence as a Physical
Quantity.
Scientific GOD Journal, December 2018, Volume 9, Issue 8, pp. 598-613

JÖGE; F.M.: Information und Wirkung.
Grenzgebiete der Wissenschaft (GW) 64 (2015) 3, 215-228

www.ijmret.org ISSN: 2456-5628

References

JÖGE, F.M.: Calculation of Dark Energy and Dark Matter. International Journal of Physics and Astronomy, June 2019, Vol.7, No.1, pp.1-7

JÖGE, F.M.: Equivalence of Energy and Time. International Journal of Physics and Astronomy, June 2022, Vol.10, No.1, pp.1-2

GÖRNITZ, TH.: Quantum cosmology https://viXra.org/pdf/1701.0544v1.pdf

JÖGE, F.M.: Time is quantized. International Journal of Physics and Astronomy, December 2023, Volume 11, pg.2

JÖGE, F.M.: The Universe – an Open System. International Journal of Physics and Astronomy, December 2023, Volume 1, pg.1

JÖGE, F.M.: Dark Energy is not constant. Applied Sciences Research Periodicals (ASRP), June 2024, Vol.2, No.6, pp.01-02

JÖGE, F.M.: Equivalence of Information and Squered Energy. Advances in Theoretical & Computational Physics, 2024, Dec. 06, Volume 7, Issue 4. pg.1

European Journal of Applied Sciences, August 25, 2024, Vol.12, No.4, pg.1

JÖGE, F.M.: Energy is Relative. Advances inTheoretical & Computational Physics, 09. December 2024, Volume 7, Issue

Tkatchenko, A., & Fedorov, D. V. (2023). Casimir self-interaction energy density of quantum electrodynamic

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12. This is the result of a new detailed study. Researchers from the University Bon evaluated images from the HUBBLE's Space Telescope together with colleagues from the US- universities of Stanford and California.

The highlight:
your calculation takes more factors into account than previous studies. Their value for the age of the universe is therefore particularly close to reality. The results will soon be published in the trade magazine „Astrophysical Journal“.