

Wolfram's Everything



Piotr Homola

Institute of Nuclear Physics PAN

CREDO Week, Discoverology Workshop, 1.10.2018

“We need new ideas”

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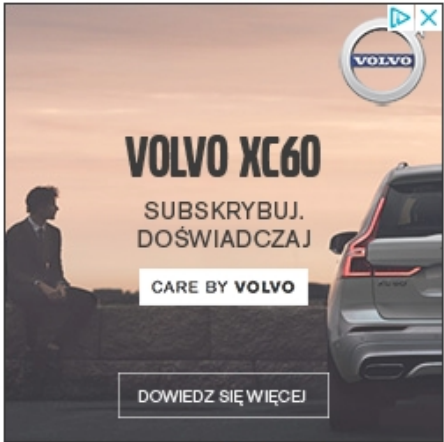
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







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




















































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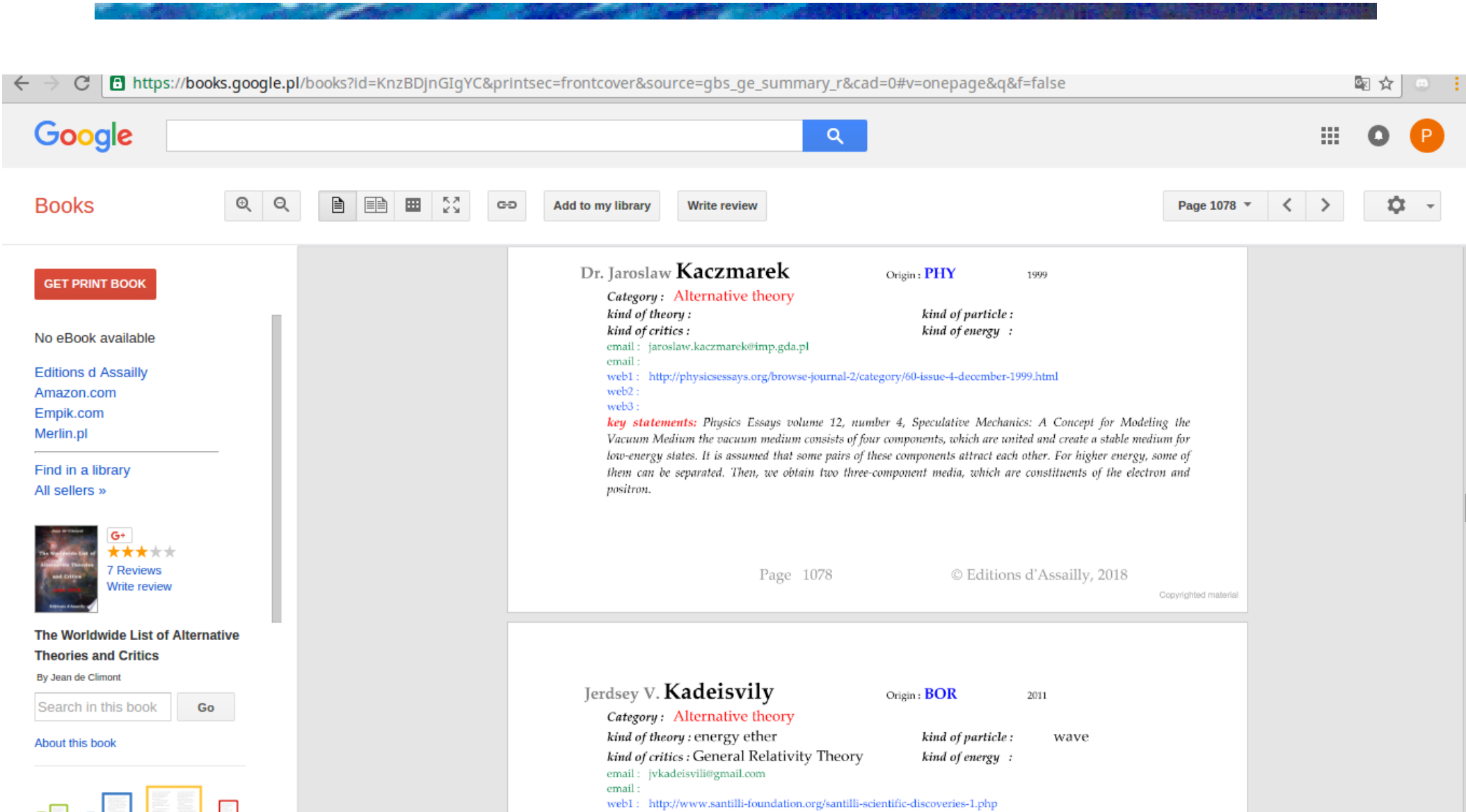
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







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Dr. Jarosław Kaczmarek Origin: **PHY** 1999

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Jerdsey V. Kadeisvily Origin: **BOR** 2011

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Dr. Jarosław Kaczmarek, p. 1078

Alternatives...

Vacuum medium mechanics as unified theory of elementary particle interactions - current stage of development

Jarosław Kaczmarek

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Abstract

In this work a mathematical description of processes considered within multicomponent vacuum medium is discussed. First part of this work is devoted to description of electromagnetic field for low energy where the description is predominantly linear and for higher energy where the equations are nonlinear. In particular nonlinear description of electric field in vicinity of charged particle is consistently described together with Coulomb type field considered on larger distances from the particle. One also describes, by nonlinear equations, effects which appear in electromagnetic wave and are interpreted as precreation states. States of the vacuum medium which are responsible for generation of the wave function are discussed. In particular one postulates existence of the chain state of charged particles. Introduced properties of the vacuum medium

Alternatives...

blog.stephenwolfram.com/2015/12/what-is-spacetime-really/

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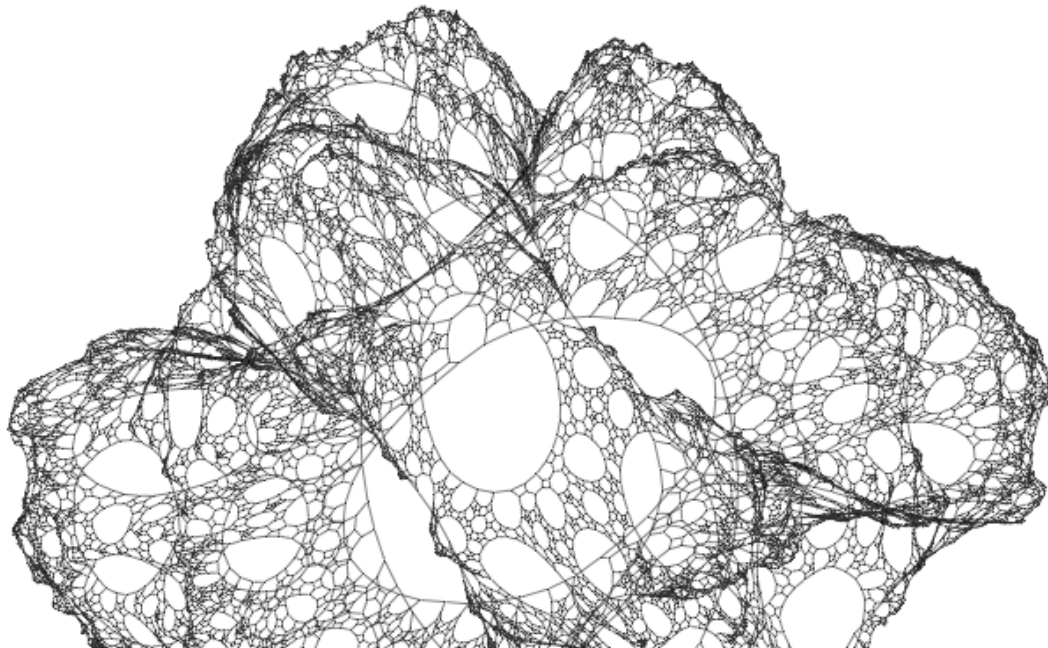
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What Is Spacetime, Really?

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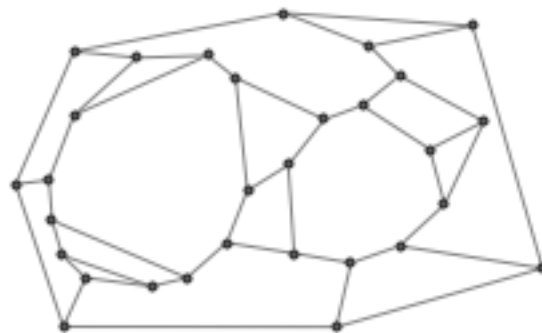
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Wolfram: **simple** ultimate theory?

Wolfram's Blog, What is Spacetime, Really?

A Simple Ultimate Theory?

In the abstract it's far from obvious that there should be a simple, ultimate theory of our universe.... what I discovered is that in the computational universe **even extremely simple programs can actually show behavior as complex as anything**. So then the question arises: **could one of these simple programs in the computational universe actually be the program for our physical universe?**

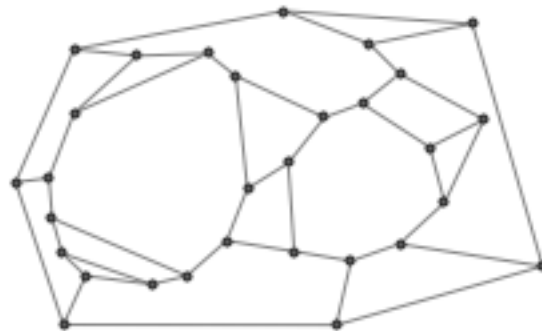


Wolfram: ... “knots in the ether” ...

Wolfram's Blog, What is Spacetime, Really?

Maybe There's Nothing But Space

But, OK, if space is a network, what about all the stuff that's in space? What about all the electrons, and quarks and photons, and so on? In the usual formulation of physics, space is a backdrop, on top of which all the particles, or strings, or whatever, exist. But that gets pretty complicated. And there's a simpler possibility: **maybe in some sense everything in the universe is just “made of space”**.

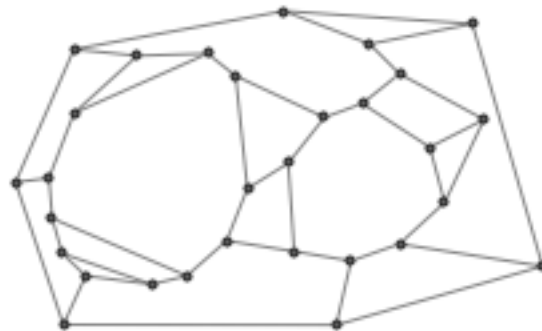


Wolfram: ... “knots in the ether” ...

Wolfram's Blog, What is Spacetime, Really?

Particles, Quantum Mechanics, Etc.

It's wonderful to be able to derive General Relativity. But that's not all of physics. Another very important part is quantum mechanics. It's going to get me too far afield to talk about this in detail here, but presumably particles – like electrons or quarks or Higgs bosons – **must exist as certain special regions in the network**. In qualitative terms, they might not be that different from Kelvin's “knots in the ether”.



Wolfram and discoverology

Wolfram's Blog, What is Spacetime, Really?

To Do Physics, or Not to Do Physics?

...The first is simply, “You’ve got to do it!” They say that the project is the most exciting and important thing one can imagine, and they can’t see why I’d wait another day before starting on it. The second class of responses is basically, “Why would you do it?” Then they say something like, “Why don’t you solve the problem of artificial intelligence, or molecular construction, ...

There’s also a third class of responses, which I suppose my knowledge of the history of science should make me expect. **It’s typically from physicist friends**, and typically it’s some combination of, **“Don’t waste your time working on that!”** and, **“Please don’t work on that.”**

The fact is that the current approach to fundamental physics – through quantum field theory – is nearly 90 years old. It’s had its share of successes, but it hasn’t brought us the fundamental theory of physics. But for most physicists today, the current approach is almost the definition of physics. So when they think about what I’ve been working on, it seems quite alien – like it isn’t really physics. And some of my friends will come right out and say, “I hope you don’t succeed, because then all that work we’ve done is wasted.

We need new ideas!

