

Einstein Mistranslated

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Introduction

We in the NPA/CNPS have been pointing out problems with Einstein's relativity for a long time, since our founder John Chappell; problems with its maths, philosophy, methodology etc.

But one of the issues rarely touched upon is the issue that Einstein has not been properly translated into English.

There are no references in Einstein's paper on SR; and because of that Max Born (friend of Einstein) tells us: "It gives you the impression of quite a new venture. But that is, of course, as I have tried to explain, not true."

M. Born, Physics in My Generation, p. 193 (London: Pergamon Press, 1956).

i.e. he admits Einstein was working from an earlier tradition of relativity.



**Max Born
1882 – 1970**

Einstein's paper on Special Relativity 1905: "On the Electrodynamics of Moving Bodies" has no references/citations of what Einstein was working from, so can give the false impression that it springs from Einstein's imagination alone through his thought-experiments.

Need now to work out the tradition of relativity pre-Einstein:

Galileo talked of relativity and between him and Einstein there were others who dealt with the relativity issue, but most get ignored; overshadowed by Einstein.

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So, are we supposed to deal with constancy of lightspeed or light velocity?

That is one example of many translation problems. I think in this case what is generally meant is “lightspeed” constancy not “light-velocity” constancy.

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I have two different translations that I can now compare.

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The usual translation OEM is awful.

I am only going to emphasize a few things.

In section 10

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whereas

AFK: Suppose that an electromagnetic field acts on a point particle with charge ϵ (hereinafter denoted an “electron”) for which the following laws governing its motion are:

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AFK: Suppose that an electromagnetic field acts on a point particle with charge ϵ (hereinafter denoted an “electron”) for which the following laws governing its motion are:

Point particle not in OEM

In the original German what was used was:

“punktförmiges” which probably translates best as point-like.

“Teilchen” is particle.

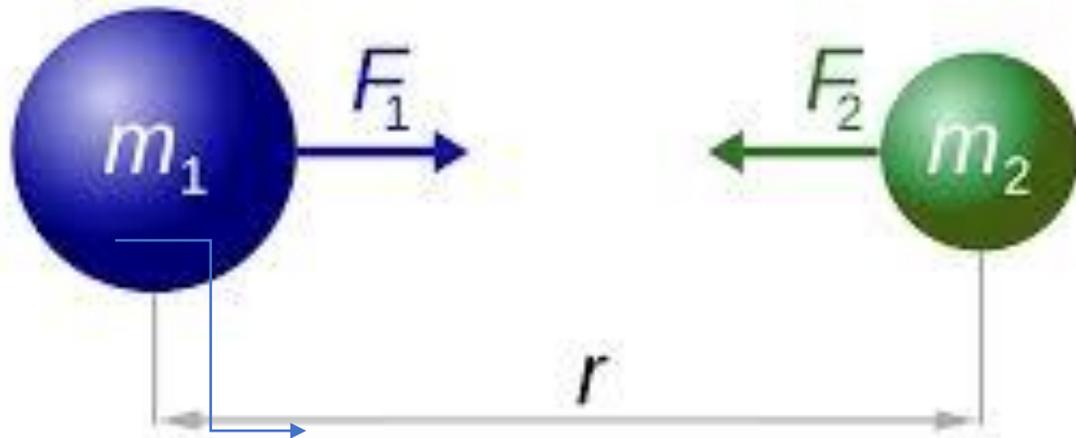
So, in English is point-like particle or **point particle.**

And in various places the term “material point” is used, which is another way of saying “point-particle.”

Thus Einstein’s paper on SR is dealing with “point-particles.”

Point particle is the theory of Newton.

When you have gravity such as between Moon and Earth it treats as idealization of point-particles.



$$F_1 = F_2 = G \frac{m_1 \times m_2}{r^2}$$

The distance r is between objects is really between their point-centres.

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The distance r is between point-centres.

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Point particle is the theory of Newton and was developed further by Boscovich.

Basis of Einstein 1905 paper on SR is Boscovich-Newton point particle theory.

So, now we have connection to SR from earlier tradition; its to do with point-particles.

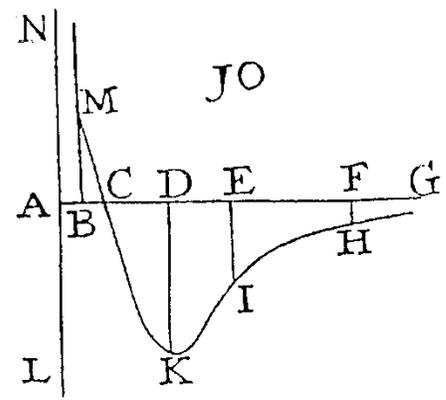
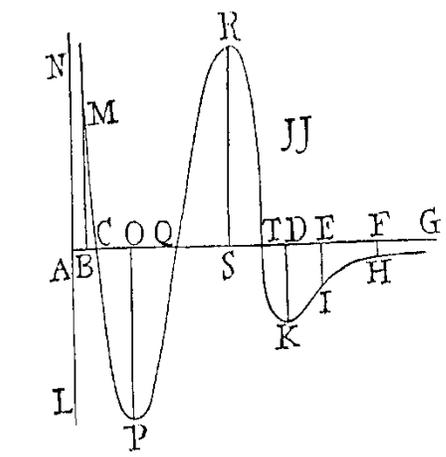
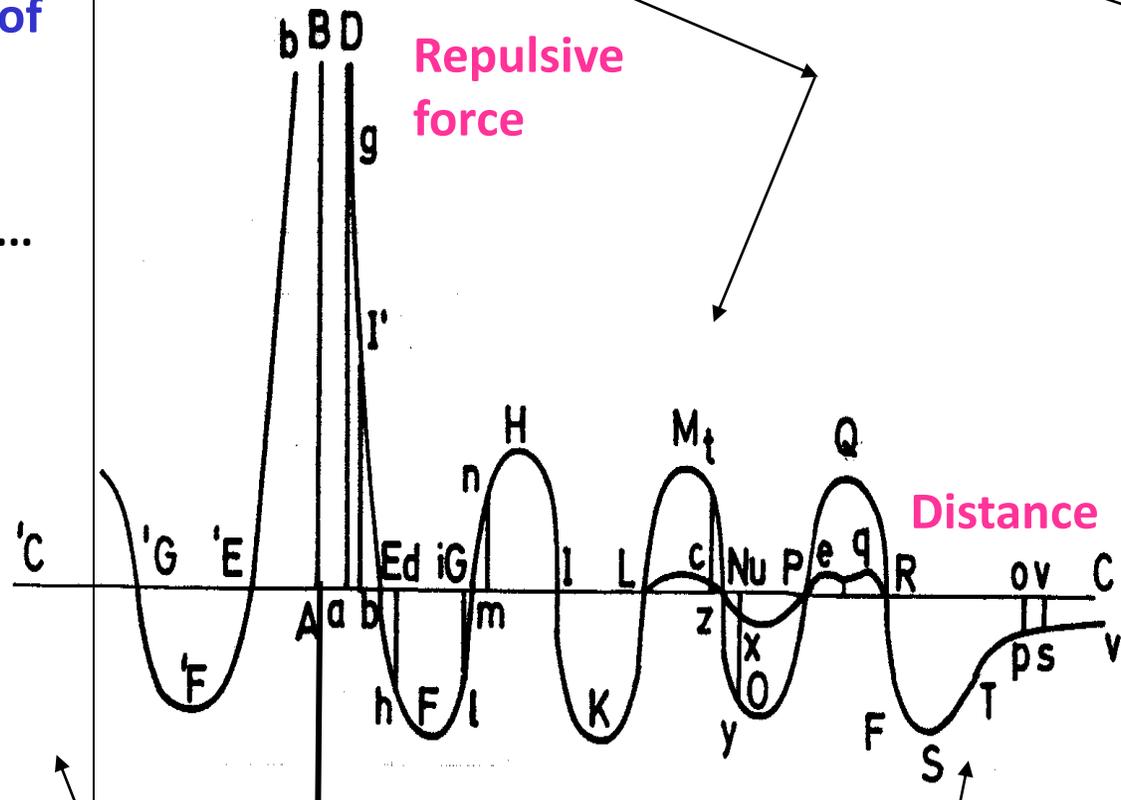
Based on OEM translation not everyone has concluded that SR was dealing with point-particles.



**Relevant book on Boscovich's
theory, by Dragoslav
Stoiljkovic**

General and some particular shapes of **Boscovich's curves**

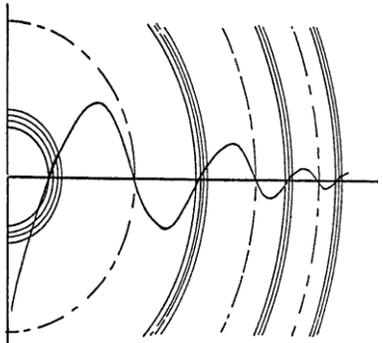
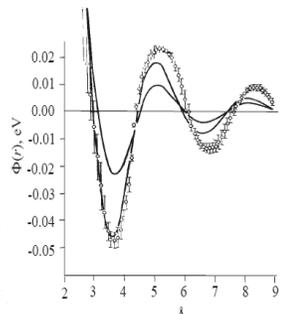
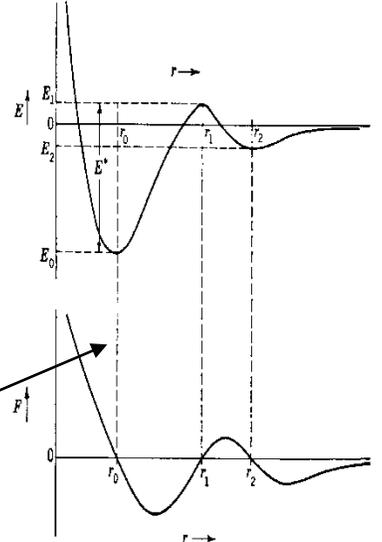
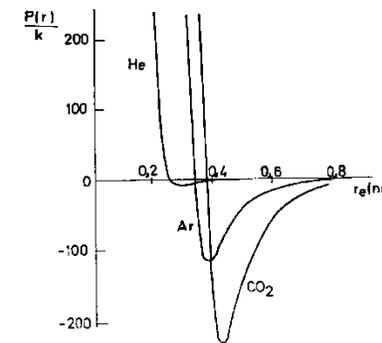
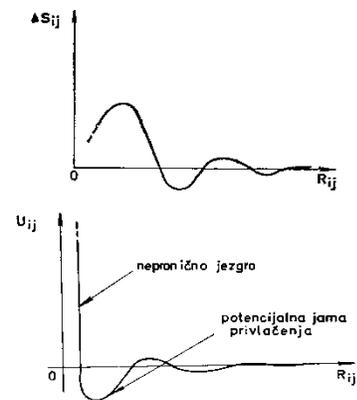
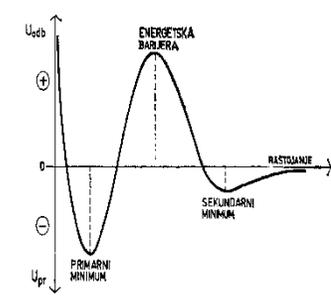
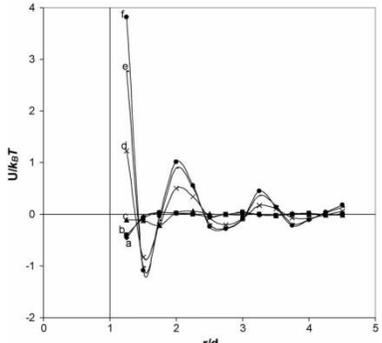
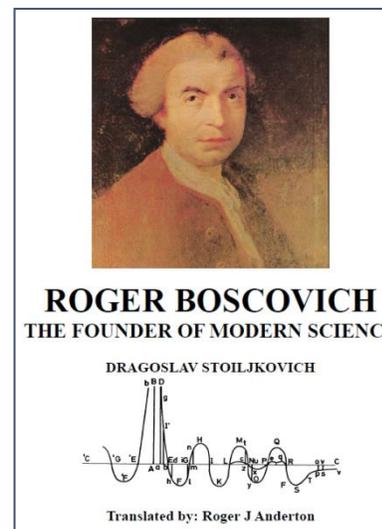
Boscovich:
Hierarchy of matter
 ...
Molecules...
 ...
Atoms...
 ...
Second order...
First order particles...
Elementary points...



Newton
 Leibnitz

Newton -
 gravitation

CONTEMPORARY VERIFICATIONS OF BOSCOVICH'S CURVE: PARTICLES INTERACTION ON SIX LEVELS OF HIERARCHY

 <p>1. Electron – atomic nucleus</p>	<p>Physical interaction</p>  <p>2. Two atoms</p>	<p>Chemical interaction</p> 	 <p>3. Two molecules</p>
 <p>4. Two macromolecules</p>	 <p>5. Colloidal particles</p>	 <p>6. Two nano-particles</p>	<p>More examples in book:</p>  <p>Translated by: Roger J Anderton</p>

Back to comparing translations-

OEM: 1. The laws by which the states of physical systems undergo change are not affected, whether these changes of state be referred to the one or the other of two systems of coordinates in uniform translatory motion.

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In the context of this we must be dealing with point-particles.

And refers to “uniform” – which we should note can apply to acceleration, so uniform equations of motion of Newton.

It has not been clear to people that SR is dealing with acceleration as well as speed of point-particles!

So, is building on Newtonian equations of uniform motion for point-particles:

$$v = u + at \quad [1]$$

$$s = ut + \frac{1}{2}at^2 \quad [2]$$

$$s = \frac{1}{2}(u + v)t \quad [3]$$

$$v^2 = u^2 + 2as \quad [4]$$

$$s = vt - \frac{1}{2}at^2 \quad [5]$$

What might have obscured this --

OEM: “Let us take a system of co-ordinates in which the equations of Newtonian mechanics hold good.”

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And has footnote: “i.e. to the first approximation.”

AFK: “Suppose we have a co-ordinate system in which Newton’s equations hold.”

And has no footnote.

The first is stating Newtonian physics (NP) an approximation of special relativity (SR):

NP \approx SR

While the second is stating

NP = SR

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**However, most people would think NP and SR do not look the same;
mainly because of Time Dilation. (An issue I will come back to.)**

For the moment I am pointing out - SR is really Boscovich-Newtonian physics.

So, getting to the issue of the maths:

OEM: In agreement with experience we further assume the quantity to be a universal constant—the velocity of light in empty space.

$$\frac{2AB}{t'_A - t_A} = c,$$

Breaking it down:

OEM: In agreement with experience we further assume the quantity to be a universal constant—the velocity of light in empty space.

There is “velocity” of light not “speed” – the problem with the German word that translates to either.

So, should be saying: In agreement with experience we further assume the quantity to be a universal constant—the **speed of light in empty space.**

OEM corrected: In agreement with experience we further assume the quantity to be a universal constant—the **speed of light in empty space.**

Contrast with

AFK: Further, we take it that the quantity is a universal constant (the [two-way] speed of light in empty space).

OEM corrected: In agreement with experience we further assume the quantity to be a universal constant—the speed of light in empty space.

AFK: Further, we take it that the quantity is a universal constant (the [two-way] speed of light in empty space).

AFK interprets that must be talking of two-way whereas in OEM there is no mention of this.

OEM must be interpreting as one-way.

One-way versus two-way

The “two way” makes it more in line with Newtonian physics.

So, I deem it a mistake to think it was one-way.

Thus from “two-way”:

Given a person – first observing light go in one direction with speed $c-v$ then rebound and go with speed $c+v$, where this is obeying normal addition of speeds as per Newton, and for $v>0$ then $c-v<c$ and $c+v>c$, i.e. the one way speeds can be less than or greater than c . While two way lightspeed is formed from average of the one-way lightspeeds:

$$\frac{(c+v)+(c-v)}{2} = c$$

$$\frac{(c + v) + (c - v)}{2} = c$$

c = constant = two-way lightspeed

Thus still have Newtonian physics: one way light speed not constant, just this strange invention two way lightspeed being introduced.

And when look at maths before what AFK says he seems justified in saying it “two way” lightspeed.

Just Einstein did not have that terminology to use when he wrote his paper.

Time dilation equation

$$t' = \frac{t}{\sqrt{1 - \frac{v^2}{c^2}}}$$

When belief was that NP is approximation of SR, this equation was believed to be SR and meant that as v tends to zero (much less than c) it approximates to NP.

Time dilation equation

$$t' = \frac{t}{\sqrt{1 - \frac{v^2}{c^2}}}$$

But under NP =SR this equation is NP, and it is not that it approximates to NP.

Newton has variable time:

Isaac Newton founded classical mechanics on the view that *space* is distinct from body and that *time* passes uniformly without regard to whether anything happens in the world. For this reason he spoke of *absolute space* and *absolute time*, so as to distinguish these entities from the various ways by which we measure them (which he called *relative spaces* and *relative times*).

Stanford Encyclopedia of Philosophy

<https://plato.stanford.edu/entries/newton-stm/>

**So time dilation equation ok with him; and
have absolute time in addition to the relative
time**

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AFK: This latter, common time **can now be defined in terms of the time that light takes to go from A to B, and its equal return, i.e., the time from B to A.**

Note the differences; will pass about going into details

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AFK: This latter, common time can now be defined in terms of the time that light takes to go from A to B, and its equal return, i.e., the time from B to A.

i.e. seems to be allowing it by definition. Then we have concepts like universal time taken up later:

Universal Time (UT) is a time standard based on Earth's rotation. It is a modern continuation of Greenwich Mean Time (GMT), i.e., the mean solar time on the Prime Meridian at Greenwich, England. In fact, the expression "Universal Time" is ambiguous (when accuracy of better than a few seconds is required), as there are several versions of it, the most commonly used being Coordinated Universal Time (UTC) and UT1 (see § Versions).[1] All of these versions of UT, except for UTC, are based on Earth's rotation relative to distant celestial objects (stars and quasars), but with a scaling factor and other adjustments to make them closer to solar time. UTC is based on International Atomic Time, with leap seconds added to keep it within 0.9 second of UT1.[a] Wiki

Universal time implies a universal frame, similar to concept absolute frame; i.e. is a defined frame chosen to be universal/absolute.

Boscovich theory is point particles with action at a distance by fields and not coming into contact.

If thinking in terms of mechanism of particles interacting by contact then seems to be LeSage theory.

Boscovich theory used to be taught until Einstein and quantum revolution then it was dropped to make room for them; so development of physics has been lost to those that are taught physics nowadays.

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The context of Einstein's relativity from earlier source was lost by the bad translation.

We have other issues such as - there mistakes in the maths of Einstein's relativity paper – which has been brought up by many people.

Conclusions II

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Conclusions II

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Light was being dealt with by most of his contemporaries (in 1905) as wave, and Einstein reintroduced the old idea of light as particles from Newton. This led to wave-particle duality concept of Quantum mechanics.

As emphasized in this lecture, his relativity was also based on particle concept. i.e. his relativity was built on Boscovich-Newtonian point particle physics, but because of bad translations from German into English that has been obscured, hence a proper appreciation of relativity has not been taught.

Conclusions III

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Which is contrary to how it is now taught with the schism between relativity and quantum theory.

For Einstein they were unified in the German, but gets lost in translation to English.

FIN.

c.RJAnderton2020