Comments and Corrections to
Unified Revolution: New Fundamental Physics

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Please e-mail me at espenhaug@mac.com with any comments or questions.

Page xvii (Preface), last line in paragraph 4: Chapter 22: "increase" should be swapped with "decrease" and "decreased" with "increased". (Espen G. Haug, December 22, 2014)

Chapter 8
Section 8.8 One-Way Speed of Light Relative to a Moving Frame (Object) as Observed from Another Frame

I have not made it clear enough that this is also fully consistent with special relativity theory. Still, there is some confusion on this point among some physicists who have not studied special relativity in great detail. This is related to what have been called mutual velocity, exterior relative velocity and closing speed within the framework of special relativity theory. See also my working paper Haug (2015) for a historical overview on this speed as discussed in relation to SR. (Comment by E.G.H. November 7, 2015)

Chapter 14

I have not been clear on the fact that Sagnac type experiments easily can be explained inside special relativity as long as one is observing the light signals from a frame other than the disk itself (like the original Sagnac experiment). When Sagnac type experiments are also set up to do all of the measurements from the rotating disk, then traditional explanations seem unnecessary complex and appear to lack a deeper logic. Atomism can easily explain why the speed of light will be different in different directions when observed from the rotating disk itself. (Comment by E.G.H. November 7, 2015)

Section 14:9: bottom of page 407: In this 1/3 page section my indications are wrong. The linear Sagnac experiment in the perpendicular direction is one of the few things that I had not derived mathematically. The math (that I have now derived for the perpendicular direction as well) and the logic show that the linear Sagnac experiment should not be affected (at least not significantly) by rotating the whole experimental set up (as will also happen if the experiment is stationary on the ground, due to the earth's rotation). This has no implications on any other conclusions in the book. This simply shows that one should "always" also do the math, before talking about "complex experiments" ("rotating" frames). (Comment by Espen G. Haug, December 22, 2014)

Chapter 16
16.3 Dual-Frame Experiments

Based on atomism, one should observe an anisotropy by repeating the experiment in different directions. However, in the subset of experiments described in **16.3.2**, **16.3.4**, **16.3.5**, I also claim that one will observe a different result when traveling in exactly the opposite directions. By carefully studying the logic and the math I have found that this is not correct. By repeating these experiments in the exact opposite directions along the same axis, one will actually observe the same result.

However, when moving the clocks in any direction other than the opposite direction, one will observe a different result in dual frame experiments. That is to say, the one-way speed of light observed will not be the same, for example, in the northern and westerly directions. The same holds true for clocks moved back together in a frame other than the frame in which they were synchronized.

In section **16.3.2**, I state that the one-way speed of light will be observed differently in the northern and southern directions. This is not true; since the north and the south are along the same axis, they will give the same one-way speed of light in dual frame clock synchronization experiments. However, as noted above, repeating the experiment in the northern and then in the westerly direction will not give the same result. Such experiments can therefore potentially be used to detect motion against the void. Such experiments can also be used to potentially find the axis that moves parallel to the direction against the void. It is important to note that such experiments are not well suited for finding the velocity against the void; they may potentially be used only to detect motion against the void and to find the axis direction.

From an atomistic point of view, this class of experiments should actually be called "multi-frame" experiments. Each axis consists of two frames (that we cannot distinguish) and therefore the experiment needs to be performed along at least two axes. Only under special relativity theory does it seems like one is only working in two distinguishable frames, no matter the axis direction.

Initial calculations show that one would need sub-picosecond accuracy clocks if done with the use of a plane. The accuracy increases with the distance one can have between the clocks and with the speed one can travel relative to the frame where the clocks are synchronized (in this case the ground on earth). (Comment by E.G.H. Dec 6 , 2015)

Chapter 17

17.1 Two –Way Speed of Light Using Einstein Synchronized Clocks:

I am not clear enough that this is fully consistent with special relativity theory. (Comment by E.G.H. November 7, 2015)

Chapter 18

18.3 Einstein Synchronized Clocks and the Speed of Light as Measured against Moving Objects

My examples are correct, but my criticisms that this example is not consistent with special relativity theory are wrong. Special relativity theory is fully consistent with atomism on this point. In my defense, I met a physics professor who claims that the speed of light against an object as observed from another frame is c. What I wish to emphasize here is that the speed of light against an object as observed from a third frame follows Galilean velocity addition rules under special relativity theory as well as under atomism. (Comment by E.G.H. November 7, 2015)

18.4 The Causality Paradox

Here my criticism of special relativity theory is incorrect. SR is fully consistent with atomism on this point. (Comment by E.G.H. 7 November 2015)