

INTRODUCTION

I am taking the somewhat unusual step of setting out my principle hypothesis by way of an Introduction. The reason being that it will be a point of reference for the reader as they progress through the Book. I feel that having this important concept in mind from the outset, will greatly improve the reader's understanding and enjoyment as they follow the development of the ideas put forward. In addition it will, I trust, show the reader where I am coming from. The historical frame of reference takes place over not much more than a hundred years. Nevertheless, this apparently brief period means that we have to take into account, and set aside if necessary, the work and thoughts of more scientists than had previously existed throughout history. During this period Albert Einstein, the German born American scientist, was the predominant figure.

Albert Einstein realized from the outset that light from two or more sources had to be initially transmitted, propagated and received sequentially, in order for the light not to be all jumbled up at an observer's eye. His momentous and historic attempt to explain this property of light, with his theories of special and general relativity, was one of the most important scientific events of the twentieth century. However, after the passing of almost a hundred years, scientists are all too aware that Einstein's special and general relativity must be flawed if, for no other reason than, in part, they predict their own downfall and do not unite physics at the macro and micro levels. It was the inability of scientists to bridge the gap between the physics of the very small and the physics of the large, that led Professor Sir Roger Penrose to refer to this elusive but essential interaction as 'the missing physics'. It was wrestling with the shortcomings in special and general relativity, that led me to attempt to find the 'missing physics' and to develop a theory combining physics at the cosmic and quantum levels. It is the gradual exposure and elucidating of the missing physics that is the subject of this Book.

My quest was started and motivated by the recognition that, contrary to what Einstein rigidly propounded in special and general relativity, it is not necessary for everyone to perceive light at a constant closing speed of 300,000 kilometres a second, to prevent light from different sources and the images

thereby conveyed being jumbled up at one's eye. I submit that the desired effect of receiving light sequentially can be achieved with the speed of light being a variable, provided that the relevant speed of the light remains constant for a given time dilation of the observer. This means that while the speed of light can vary from observer to observer, as their time domains vary, nevertheless at the eye of each individual observer all rays of light seen by him will have a common speed. This will be the case regardless of the speed or state of the source or the speed or state of the observer.

This is because, as we now know, light is quantized i.e. produced in discrete packets of electromagnetic energy of a given wavelength, at a fixed rate per second. The important question therefore is, whose second does the quantizing? For an observer to see all rays of light having the same closing speed, the answer has to be, the observer's. It is the case that, due to variation in speed or proximity to mass, the time of the transmitter or receiver will dilate or contract, so that each second, in comparative terms, will become longer or shorter, as the case may be. However, the number of quanta each dilated or contracted second controls will not alter unless the wavelength alters. So the speed of the light relative to the observer, is propagated in discrete packets of time as well as energy. As all this is done in accordance with the observer's own real time, all rays of light will have the same speed for him (see Time Dimensions and the Speed of Light in Chapter 22 and Time and the Speed Of Light in Appendix 1).

From the observer's perspective light from whatever source, will enjoy a common quantization of time and energy, ensuring that he sees all rays of light with the same closing speed. For the observer the time dilation in his time domain, is real time. Since on Earth, variations in time caused by speed or altitude, are very small, they may be ignored and time may be regarded as approximately constant. This is how Einstein mistook the speed of light on Earth for a universal constant. I trust the concepts I develop in this work, will eventually be accepted by the reader as both reasonable and inevitable.

I aim to show that my ideas can be readily envisaged if it is assumed that a light wave oscillates at a constant rate within its own time dimension, with the

predictable consequence that its rate of oscillation and therefore its speed will be perceived to alter as the external time dimension of the observer dilates or contracts. In other words, the speed of light is a function of the time dilation of the observer. As soon as we believe that these simple adjustments can be made to our calculations, the need for the bizarre postulates of special and general relativity fall away, that is to say, there is now no need for the measurement of distance to be adjusted when someone is travelling at a high speed. The speed of light is no longer required to be calculated as being a constant 300,000 kilometres a second, so distance does not have to be notionally adjusted to comply with this flawed postulate. If we recognize that the speed of light increases in accordance with time dilation, it can be determined by a straightforward quantum calculation. The parameters for this calculation are met by keeping the rate of quanta for a given wavelength of light constant for a unit of time regardless of its dilation.

In order to keep all rays of light at this common speed, adjustments are made by taking into account the blue or redshift due to either the Doppler effect or gravity. There is no need to continue to try to imagine the universe shrinking to zero size. Likewise there is now no need for a bystander to have to see a passing spaceship shrink in size along its direction of travel, to the absurd point where it reaches zero size at the speed of light, while at the same time noting that the inertial mass of the spaceship and the crew in it gradually increases towards infinity. It is with a two-fold relief that one realises that these features are no longer required, for not only are they bizarre and disturbing to think upon but they were scientifically inexplicable and were merely a mathematical fiction for the purpose of expediency.

Expediency and convenience play little or no part in the world of relativistic physics, so an appropriate question to ask is: why is it necessary for the speed of light to vary? I submit that it is a consequence of the law of the conservation of energy. On Earth we confine the law to energy because when the law was conceived, scientists did not realise that time varied. Even today we regard the variations in our time domain on Earth to be so small as to be insignificant when considering energy. However, in the world of cosmology and relativistic physics the variation of time is of great importance. The law of the conservation of energy

becomes the law of the conservation of the function of energy and time, i.e. cosmic power. As electromagnetic waves are a pure form of energy then time, wavelength and frequency become important elements of the conservation law. Variations in wavelength and frequency wrought by variations in time, inevitably give rise to a variation in the speed of light.

To sum up, there are two principles which are the cornerstones of my theory. One is that the speed of light as measured by a body is proportional to the dilation of the body's time. The other is that time is radiated off from a body in proportion to its mass. It is radiated off in the form of a field that falls away at the square of the distance, similar to gravity. It joins and acts in concert with the fields of other bodies, to form a time continuum throughout the universe. The time a body experiences locally and which is specific to itself, can be further dilated or contracted. The exclusive time a body experiences is dependent on its specific state. This state can be influenced by the strength of the time field at the point where the body is located. It can also be as a result of extra energy being induced into it, such as the energy of motion or heat. Putting it simply, if for any of these reasons, the time of a body is dilated or contracted the speed of light for it will increase or decrease respectively.

The theories developed in this Book are my own independent work carried out from my home. Due to my personal circumstances I have not been able to conduct a full search of all published work in this field. As on occasion such matters did not inhibit Einstein, I have followed suit and published anyway. If I have failed to acknowledge the priority of a previous author on any aspect of this work I will be pleased to rectify that defect in the next edition.

One of the goals I feel I have achieved in this work, is to give an explanation of quantum gravity that complies with the above essential requirements. In Part IV, I proffer a quantum model that has developed out of these ideas on time and light. I also set out in the Appendix, eleven Papers that I have written to clarify some points. I apologise in advance for the inevitable repetition that is involved.

To those scientists whose reputations, funding or careers depend on special

and general relativity I can only ask for their indulgence. I appreciate that it will take a special flexibility of mind to turn aside from theories that are so well entrenched.

Frank Atkinson, November 2005