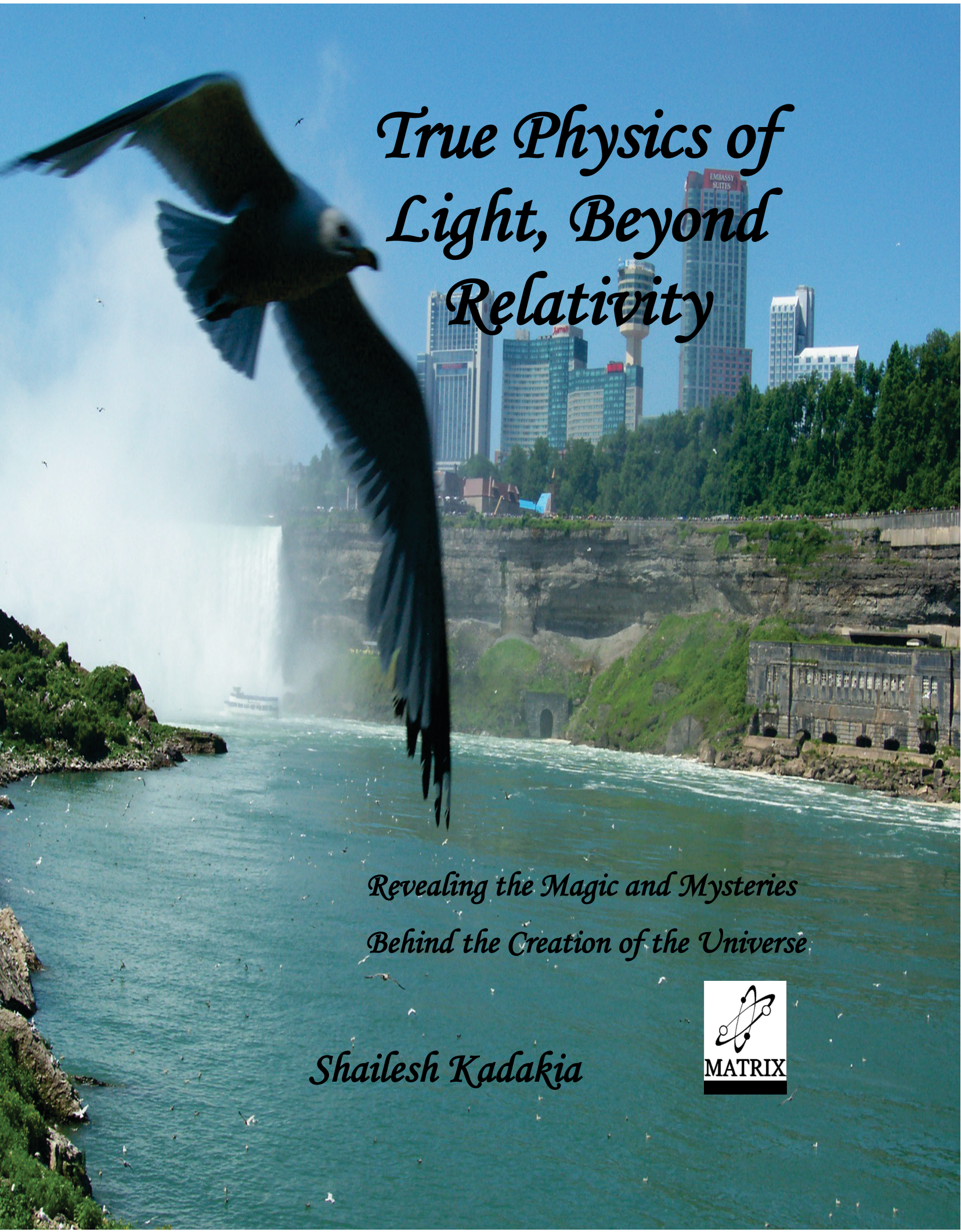

True Physics of Light, Beyond Relativity

Revealing the Magic and Mysteries Behind the Creation of the Universe

Shailesh Kadakia

MATRIX

True Physics of Light,

Beyond Relativity

Shailesh (Sky) Kadakia

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Behind the Creation of the Universe

With 40 illustrations of which 29 in Color

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True Physics of Light, Beyond Relativity

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Dedication

To my parents,

Lilavanti R. Kadakia & Rasiklal S. Kadakia

Thank you for your constant encouragement and support.

– Shailesh Kadakia

Preface

An energy source, such as light, can be seen by humans yet cannot be otherwise sensed. It is known to have no material mass yet has revealed visible and physical effects of mass through several physical phenomena, such as photoelectron emissions and others. This strange nature and behavior of light energy waves has made it the most poorly understood energy source of nature. Often in the past, many scientists have erroneously modeled the dual behavior of light, sometimes as a particle and sometimes as a wave. After reading this book, you will be convinced that light energy waves strictly behave as waves, and that all of the phenomena and results of experiments over the past two centuries, to prove that light occasionally behaves as particles, were incorrect. Another source of energy is the force of gravity whose cause is not known to date. In this book, we have attempted to analyze the root causes of the force of gravity, among different celestial objects in the universe. Another puzzling question is, at what speed the force of gravity propagates? Albert Einstein had suggested that in vacuum, the propagation speed of gravity is the same as the speed of light waves. According to the postulates of the special theory of relativity, the speed of light in a vacuum is constant **c**. The speed of light varies according to the frame of reference, which is in-concert with the varying speed of light (VSL) theory proposed by the Portuguese physicist, João Magueijo, a research fellow in theoretical physics at Cambridge University. Therefore, it is imperative to answer the question, at what speed the force of gravity among different objects propagates. The speed of light is no longer constant in accordance with the **Skylativity**® theory.

The main intention of this book is to correct the basic understanding of the fundamental ideas regarding the nature of light, the special theory of relativity, and the general theory of relativity. The book is primarily written for first-year college students who are considering physics major. It assumes competence in high school algebra, geometry, and calculus. Since our emphasis is on improving the conceptual understanding of physics, and not to understand mathematical rigors, we have discussed analytical expressions with simplicity. Another purpose of this book is to determine an ideal theory of everything that will tie the creation of the universe, which contains huge celestial objects, such as galaxies, super nova, and nebulae, to the tiniest fundamental particles, such as quarks and fermions. Also, we shall utilize the concepts of the **Skylativity**® theory to marry classical mechanics with quantum mechanics and create a universal unified field theory (UUFT) of everything.

The content of this book is organized as follows:

In Chapter 1, we begin with a discussion on the nature of light and we are very critical about its behavior as a wave and not as a particle in some events, as quoted by Einstein and others. Then, we touch on some of the events that our predecessors thought were occurring as a result of the bending of light by the force of gravitation. A detailed examination of the

analysis of events will convey that it is impractical to predict that light waves are bending by the force of gravity. Next, we explain why the conclusion that light behaves as a particle, based on experiments performed in early 1900's, through modern times, may be incorrect. We demonstrate this by analyzing the sets of experiments of the photoelectric effect, short wavelength limit X-rays, the Compton Effect, and Michelson's interferometer. We substantiate the wave theory of light by explaining Doppler's shift effect and the rotation of a fan when its thin blades are coated with semiconductor paste and are exposed to light. Also, we point out that the concepts of time dilation, introduced by Einstein and Lorentz, are incorrect as a result of the wrong conclusions drawn from the analysis and results of Michelson's apparatus. In this chapter, we successfully indicate that some of the ideals proposed by Einstein, and subsequently promoted by Lorentz and others, may require further analysis.

In Chapter 2, we describe the basic differences between the physical properties of a wave like entities, and particles. Then, we explore the speed of the propagation of light and electromagnetic waves. We emphasize that the speed of light and electromagnetic waves is variable and it should vary differently in medium with different refraction coefficients. Also, it should alter if the frames of reference are moving at different speeds. Then, we introduce the concept of the true speed of light and formally define it, based on the distance between the speed measuring instrument and the source of light as invariant over the arbitrarily small time interval. We explain the importance that not all of the energy waves of the electromagnetic spectrum should be travelling at the same speed. Therefore, it may be imperative that the electromagnetic spectrum table should be split into three or more tables. We briefly discuss the strengths of the interactions of weak, strong, and residual forces on interacting particles and compare them over the range of the distances they encounter. Next, we analyze the expressions for the energy released during a nuclear radiation and explosion event and in general, the method for specifying the energy content of the light waves. In our analysis, we prove that the energy released during a nuclear explosion event, computed by Einstein's equation $\mathbf{E = M \times c^2}$, estimates the energy liberated in the excess amount rather than the actual value. Also, we explain that the major source of the energy released, is from the liberation of the binding energy of the nucleons at the core of the atoms of the radioactive matter and not the consumed mass of the matter, as explained by Einstein, in a nuclear explosion device, when detonated. We provide the correct analytical expression for the released binding energy. In this chapter, we also choose to discuss the topic of the temperature profile of the prime energy source, the sun in our solar system. We want to direct our attention to the fact that the temperature calculations predicted by the current techniques have provided large values for the surface and core temperature of the sun. These numbers are unrealistic and other methods are needed to confirm the results of the measurements to date. In particular, this is true for the 15M°K estimate for the core temperature of the sun. To predict the temperature profile for the sun's core, we have proposed a different solution.

In Chapter 3, we start explaining the theory of relativity, as postulated by Einstein, which has been widely accepted for a little over the past century. Here, we want you to be familiar with and refresh your memory about the basic concepts of the general and special theories of

relativity, first introduced by Einstein. We shall refer to his theory as the E-theory, from the name of its inventor, Einstein. Also, we shall use a similar name to abbreviate and refer to the postulates of special and general **Skylativity**® theories introduced by us, as K-theory. In the next section, we state postulates of the special and general **Skylativity**® theories. We highlight the differences between the postulates of E-theory and K-theory and explain the implications of the new theory to the applications of radio astronomy and cosmological measurements. Next, we point out, that on the basis of the new theory, Lorentz expressions for length, mass, and time computations for different inertial systems, are not required. Then, we discuss the modifications required in Maxwell's field equations, to reflect the variation of the speed of light among different frames of reference. Finally, we describe the changes required in the solution of Einstein's field equation that take into account the varying speed of light **c**.

In Chapter 4, we begin with a discussion of the limitations of Einstein's general and special theories of relativity, when applied to the measurement of length, time, and mass. We describe an example of a common incandescent light bulb to show that light energy can be generated when a finite amount of electrical energy is supplied. By showing this, we are stating that with a finite source of energy, light photons from a tungsten wire filament can be accelerated from zero speed to light speed. This contradicts the claims of the earlier theory that an infinite energy supply is needed to attain the speed of light. In Section 4.2, we indicate that, in the same example of the light bulb, when a filament emits light, it does not lose any mass. Therefore, for every event where the light energy is released, the popular energy to mass conversion relation, $\mathbf{E = M \times c^2}$, does not hold well. In Section 4.3 we explain that if we believe for an object, a different measured mass value for a different inertial system, we have to infer that the speed of light should be different in those frames of reference. This is true because the mass in both reference systems possesses the same rest mass energy. To resolve this conflict of mass variations for masses of moving objects, we introduce a concept that total mass consists of a real rest mass component and an energy mass component. The distribution of the rest mass component supposedly affects the center of gravity. The orthogonal imaginary component, the energy of mass, may affect the future position of the center of gravity after time $\boldsymbol{\delta t}$ is known as the dynamic mass. In Section 4.6, we propose that time dilation is a fictitious concept that was introduced by Einstein and others. His skewing of the time dimension does not make sense. Therefore, the time dimension is invariant and measured time will always be the same if clocks in the two inertial systems are truly identical. In the final section 4.7, we show that the stellar parallax distance measuring method would introduce a vast number of errors, if we assume that the light rays arriving from other stars, when passed by the sun, will be deflected by the force of gravity from the sun. Hence, it makes sense to state that light rays do not bend by the force of gravity.

We firmly believe that the Lorentz transformation equations for mass, length, and time measurement, for different inertial systems, are not needed. Therefore, in Chapter 5, to investigate a hypothetical situation, we explore the effect of the variable speed of light on the mass, length, and time measurement, using the current Lorentz transformation. We analyze

the values of mass, length, and time measurements for two different scenarios, approaching systems and receding systems. In the infinite universe, those two scenarios play a more important role in the space coordinate transformation than the linear movement in the X, Y and Z directions for two or more systems.

In Chapter 6, we highlight the benefits derived when the new postulates of the **Skylativity**® theory are applied to modern day astronomy and space science. In the first section, we describe the ways that create surplus funds and resources. We convince you that it may not be essential to invest funds in the construction of huge super colliders. At present, a significant amount of resources are spent to build proton accelerators to determine if the speed of light is achieved by a particle. The postulates of the **Skylativity**® theory state that the speed of light is achievable by particles, therefore, the financial and manpower resources may be saved by not applying them toward the construction of huge super colliders in the future. In Section 6.2, we stipulate that the measurement scales for mass, length, and time units are universal and constant among different frames of reference. This approach avoids the complex formulation of the Lorentz contraction of length and time dilation, while computing the coordinates in different inertial systems. In Section 6.3, we address the decay rate of very weak interacting neutrino particles from the sun. Scientists believe that the lifetime of these particles is very short, so, they will disintegrate before they reach the Earth's atmosphere. The particle survives because the decay rate is slowed by the time dilation factor computed according to the Lorentz formulation. We believe that time dilation is a virtual effect and should not affect the decay rate and disintegration of the neutrinos. In Section 6.4, we propose that the discovery of quarks allows us to develop future weapon systems with enormous power, similar to the fission of ^{238}**U** into ^{235}**U**. Alternatively, the controlled triggering mechanism that smashes protons and neutrons into quarks may be applied to design power plants. These power plants have the potential to generate a vast amount of energy source from the release of the binding energy of quarks. We shall call this proton and neutron power plants. In Sections 6.5, 6.6 and 6.7, we discuss the future of the space program and suggest ideas for the design of spacecrafts that travel at fractions of the speed of light.

In Chapter 7, we develop the universal unified field theory (UUFT) that integrates the effect of gravity from macroscopic objects, such as celestial stars, galaxies, and nebulae, with the strong forces of particles in the standard model which deals with microscopic particles. This has been a huge challenge in the past because gravity is found to be a very weak interacting force, as compared to the charge and spin momentum forces with strong interaction effects within nucleus of tiny atoms of particles. Next, we analyze the reasons for gravity. Every object in the universe projects a force of gravity on another object because both objects possess momentum and potential energy associated with each other. As per our explanation, the force of gravity exists among any two objects that have real mass and a static location for the center of gravity. Therefore, the force of gravity from large celestial objects does not have any effect on the trajectory of wave entities, such as light rays and electromagnetic radiation energy waves. In section 7.3, we briefly discuss time travel, which is a fictitious concept. Time travel only exists in your imagination because time dimension cannot be retraced. For instance, the conversion of hydrogen into helium atoms, through the

thermonuclear burning process on the sun, is an irreversible process. This implies that, at the end of the life of the sun, the death of our civilization is imminent. Also, no power on earth could ever change the rate or speed at which the sun orbits on ecliptic to the center of galaxy. In Section 7.4, we discuss the reasons why the weather forecasts are not accurate at all times.

In Chapter 8, we focus on black holes and the origin of the universe. In Section 8.1, we explain that black holes do not have super gravity. Many scientists have claimed that black holes are massive with a super gravitational field in which light is trapped. We believe that light does not escape from black holes because it is absorbed. We provide a formal proof of our theory. Also, we believe that the universe is neither expanding nor contracting because the space of the universe is boundless. If we state that the universe is expanding, it implies that we know there is something outside the limit because it must expand into space that was either occupied previously or created by the expansion. There is no evidence which proves that such an expansion is observed inside of our galaxy. It is not obvious how the selective expansion of the universe could occur outside our galaxy. Our prognosis about the observed red-shift of celestial objects, such as other galaxies and supernova is correct because they are moving away (receding) to maintain the balance between gravitational effects and centrifugal force. Thus, it is essential to redefine Hubble's constant in his law for the three dimensional movement of celestial objects. Next, we suggest that the mapping of the sky should be partitioned into past, present, and future universes, according to the separation of celestial objects from our earth and the solar system. In Section 8.5, we discuss the ultimate fate of our solar system after all of the hydrogen is transformed into helium at the sun's core through the thermonuclear burning process. In Section 8.6, we explain why the planets Venus, Uranus, and Pluto, rotate from the east to the west on their axis instead of the west to the east motion of the Earth, Jupiter, Saturn, and other planets. In Section 8.7, we explain why the orbits of comets are asymmetric. In the final section of this chapter, we look at some of the advances in modern physics, such as the String theory and new dimensions.

In Chapter 9, we discuss the ways to bridge the gap between the classical Newtonian mechanics and quantum mechanics. In Section 9.1, we revisit the outcome of Young's double-slit experiment and the behavior of a quantum particle electron in a shell orbit, by applying the principles developed by Erwin Schrödinger. In Section 9.2, we analyze the discrete model for radiation from the surface of a black body invented by Max Plank. We show that the quantum of energy possessed by the light wave, Plank's constant **h**, is inherited from the parent particle. Therefore, **h** is property that is associated with the quantum particle electron and not the fictitious particle photon. In this chapter, we establish that the quantized model to characterize black body radiation, from Plank, should not prohibit us from proving the wave as the only model for light and radiation energy. In Section 9.3, we discuss an important contribution to quantum mechanics, from a somewhat less recognized physicist, Paul Dirac. His ideas were instrumental in the prediction of the existence of the complementary particle, pair proton, anti-proton, electrons, and positrons. Also, his equations validated many different concepts and theories, such as Pauli's theory and the hole theory of atoms. In Section 9.4, we address the main objective of this chapter, to connect classical mechanics and quantum mechanics. We achieve this objective by explaining the operation of

quantum devices, based on Schrödinger's equations. In Section 9.5, we discuss the practical application of quantum mechanics by looking at an example of the scanning tunneling microscope. In Section 9.6 we describe the applications of quantum mechanics as a solution of complex problems, such as finding material that exhibits super conductivity at and near room temperature.

Further information and details about the topics discussed in this book can be obtained at the web site **http://www.Matrixwriters.com.**

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Our sincere thanks go to President, Dr. J. J. Rawal and Scientist Viren Dave, both of the Indian Planetary Society, for meeting with Mr. Kadakia during his trip to India in the fall of 2009. We admire their valued comments and discussion on the subject of relativity and current technology. Also, we appreciate the valuable comments from Emeritus Professor, Dr. Jayant V. Narlikar of Inter University Centre for Astronomy and Astrophysics (IUCAA), Pune, India. Further, we appreciate the suggestions from Dr. Steven Manly of the University of Rochester, asking us to address and explain the characteristics of black body radiation emission by applying the wave model for radiation. Also, we extend our thanks to Dr. Munawar Karim, Professor of Physics at St. John Fisher College, Rochester, NY for his valuable comments. We would like to extend our gratitude to Mr. Kadakia's colleague, Raymond Mulgrew, Harris RF Communications, in helping him review the text of the book and by providing suggestions to improve the content of this book. Next, we appreciate the constant inspiration from Mr. Kadakia's graduate advisor, Dr. Lyndon Taylor, The University of Texas. Also, we thank Professor Richard A. Matzner, Director Center for Relativity at The University of Texas, for his encouraging remarks for the creation of this book. Further, we thank Dr. Cynthia Galovich from University of Northern California and Professor Walter Toki from Colorado State University for providing useful suggestions on the ideas presented in this book. We thank several medical doctors, in particular Ophthalmologist Dr. Sonal Jadhav and Cardiologist Dr. Sunil Dabhade, for supporting and taking interest in the research.

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Prologue

This book is about the true science of light. Many physicists from the beginning of time have failed to recognize the clear understanding of the exact nature of light as it relates to different events, either occurring naturally or created by human efforts. They have portrayed a sense that light behaves as waves in certain events and occasionally it behaves as particles. This ambiguous description of light pondered pioneer physicist Albert Einstein to formulate complex concepts of relativity theory and gravitational theory. Subsequently, renowned physicists, such as Richard Feynman, Roger Penrose, John Wheeler, Charles Misner, Stephen Hawking, and Kip Thorne, extended Einstein's principles to explain the mysteries surrounding distant celestial vast objects, black holes. In their discussion, they and physicist Stephen Hawking have inadvertently stated that black holes have super gravitational fields. From our point of view, light behavior is simple and straight forward in the sense that the rules of Newtonian classical mechanics may be applied without incorporating any special treatment for light. Therefore, black holes absorb light similar to a perfect black body. Further, the behavior of light can be very accurately characterized as a wave, regardless of the type of event. Very close examination of all the experiments performed to prove that light is a particle in those events, could very well be understood if it is modeled as wave.

One of the greatest strengths of this research is that the principles explained in this book provide a rather simplistic view point for several phenomena of complex nature, such as the bending of light caused by refraction as it passes to the medium and time dilation effect experienced by the very high speed moving objects. Our view point extends the ideas suggested by the Portuguese physicist, João Magueijo, a research fellow in theoretical physics at Cambridge University. We have taken one step further, proving his ideas of the Varying Speed of Light (VSL) to be correct. When our concepts are verified, you will gain a clear understanding and explanation of the events related to light, by applying the basic principles of atomic physics described in the book. Here, we have achieved success by taking advantage of the modern techniques and advances made by particle physicists. These physicists formulated the standard model, and the quark extension to the standard model, to describe all of the elements on the periodic table that are found in nature and artificially created. We have provided answers to many questions about the creation of the solar system and the universe that were not answered by previous creation theories, such as the big-bang.

Our theory of relativity, postulated by Mr. Kadakia, designated **Skylativity®**, comes from a simplification of many computations related to sky and the universe, and presents the results with higher accuracy than before. It leads to the formulation of the Universal Unified Field Theory (UUFT), and provides time and space invariant scales for length, time, and mass measures, for every frame of reference. You will discover that Einstein took a risk when he formulated his famous theory of relativity by making unrealistic assumptions. When he stated that time measured in different inertial systems by identical clocks would differ, he ignored the fact that the identical clocks ceased to remain identical in design, when they were stationed in each of the inertial systems. Further, he assumed that the speed of light is a

constant in James Maxwell's field equations. More recent advances in technology have verified that the speed of light has varied since the beginning of time and it varies according to frame of reference like an ordinary particle obeying the laws of Newton's mechanics. Our sense of accomplishment and quest will be complete when dedicated physicists and astronomers redirect their resources to promote the ideas of this book and to build a solid foundation for future space expeditions.

3.

Postulates; Relativity Basics

What Einstein's relativity is about? We have concise answer

In this chapter, we shall review the postulates of Einstein's special theory of relativity (STR) and general theory of relativity (GTR). Then, we shall look at the new postulates of relativity, the **Skylativity**® theory. Occasionally we shall refer Albert Einstein's theory of relativity as E-theory for convenience and refer Shailesh Kadakia's **Skylativity**® theory as K-theory of relativity.

In section 3.1 we shall review postulates of special relativity theory. In section 3.2 we shall describes concepts of general theory of relativity proposed by Albert Einstein. In the next section we shall formally describe new postulates of special relativity hence forth labeled as **Skylativity**® Theory or K-theory, relativity applied to Sky. In section 3.4 we shall discuss postulates of general relativity of K-theory and describe the differences between Einstein's work and new postulates developed by us. At first instinct it might appear that this work leads to old theory of classical mechanics. Detailed analysis will reveal that this work fills the holes that were left behind by Albert Einstein in his famous celebrated theories of special and general relativity. Specifically we shall address issues pertaining to the implications of speed and nature of light when the light source is experiencing acceleration. Einstein took it for granted that speed of light must be constant and independent of frame of reference, a concept he borrowed from Maxwell. Maxwell's famous equations assumed that the speed of light does not vary even if a frame of reference is mobile. Therefore in section 3.5 we shall see the ways Maxwell's equations are affected by changes in the speed of light. In the following section we shall discuss the changes required in Einstein's field equation to account for variable speed of light.

It turns out that Einstein left gap in his theory by not discussing effect of acceleration

on speed of light when the source of light is residing in an accelerating frame of reference. Another drawback of his work was he favored kinetic energy effect to potential energy effect on mass of object. He stated that total mass of object consists of two parts, the rest mass plus the energy mass due to kinetic energy possessed by the object. We shall see that mass of object should be a constant; a value corresponding to the rest mass. Mass gained by an object due to speed changes in the object do not represent real mass changes because changes in kinetic energy of objects are always compensated by changes in potential energy of the system of as a whole.

3.1 Principles of Special Theory of Relativity from Einstein

In this section we shall review postulates of special relativity theory as stipulated by Einstein. Einstein formulated the principles of special relativity theory in 1905. We shall sometimes refer his postulates by the name E-theory. The main focus of postulates of special relativity theory dealt with fundamental properties of light, propagation speed and conversion of mass into radiation energy waves. The principle of special relativity theory is based upon following postulates [7].

- The laws of physics may be expressed in equations having the same form in all frames of reference moving at constant velocity with respect to one another. Not only the laws of mechanics but those of all physical events, in particular, of electromagnetic phenomena are completely identical in an infinite number of frames of reference which are moving with constant velocity relative to each other and which are called inertial systems. In any of these systems, lengths and times measured with the same physical rods and clocks appear different in a different system, but the results of measurements are connected with each other by Lorentz transformation [19].

- The speed of light in free space has the same value for all observers, regardless of their state of motion. Einstein's substantiated the constancy of speed of light by argument that the measured value for the speed of light for any frame of reference.

$c = (\mu_0 \varepsilon_0)^{-1/2}$ m/s.

where μ_0 is permeability of free space and
ε_0 is permittivity (dielectric constant) of free space.

He believed that μ_0 and ε_0 free space constants should not change for a moving frame of reference. We shall explain later in section 3.3 why his assumption that permeability of free space constant μ_0 is constant and independent of motion is incorrect for a mobile frame of reference.

- Einstein stated that a quantity of mass in principle can be converted into an amount of

energy E

$E = m \times c^2$

where m is the vanished mass of material and
c is the speed of light in m/s.

Later in 1920's, British astronomers Arthur Eddington and Robert Atkinson applied principles of Einstein's theory to calculate energy released during thermonuclear fusion of Hydrogen atoms into Helium atoms a process occurring within our Sun. The fact that radiation of billions of watts of power per second from the sun results in feeble decrease in mass, provided first evidence that Einstein's energy transformation equation made sense. However this translation of mass in the energy equation neither quantified the energy components the mass is neither transformed into, nor stated how much of the energy in infrared, visible light, or dissipated as increase in kinetic energy of the system. Also, this energy equation did not state phase relationships among different components of energy waves.

- A changing magnetic field vector in one frame of reference induces a changing electric field vector in frame of reference that has relative motion with respect to the former frame of reference and vice versa. This postulate is of prime importance in design of electric machinery such as induction motors and alternators.

Read more…….

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Why Einstein's relativity is always speculative? We have more precise answer than before

3.2 Principles of General Theory of Relativity from Einstein

In this section we shall review postulates of general relativity theory as stipulated by E-theory. Primary objective of general relativity theory was to analyze effects of force of gravity from all objects within the Universe on each other. The principle of general relativity theory is based upon the following postulates.

The principle of Equivalence

- The inertia of body is to be regarded no longer as an effect of absolute space but rather as one due to other bodies. In ordinary mechanics the motion of a heavy body (on which no electromagnetic or other force act) is determined by two causes:

  (1) Its inertia tending to prevent acceleration with respect to absolute space;
  (2) The gravitation of the remaining masses. The motion is determined by the distribution of the remaining masses in the universe.

- For events on the earth the principle states that all bodies fall at an equal speed under the influence of earth's gravity. For motions of heavenly bodies the theory states that acceleration is independent of the mass of the moving body.

- The laws of nature are represented by invariants for arbitrary transformations of the Gaussian coordinates, just as the geometric properties of a surface are invariant for arbitrary transformations of the curvilinear coordinates.

- Light waves arriving from distant stars are bent by force of gravity from a nearby star such as the sun. Also, speed of light should decrease by force of gravity from the sun. Einstein and several other scientists believe that light arriving from distant galaxies and nebulae are bent by force from nearby galaxies.

  This bending of light is believed to be the cause of multiple images observed under telescopes. The effect popularly described as the science of gravitational lensing is an extensively studied topic. A detailed mathematical model and analysis is performed for the effect by leading physicist and astronomer Dr. John Peacock at Cambridge Institute. We believe that the multiple images of distant celestial galaxies is caused by refraction of light from earth's atmosphere and refraction of light caused by clouds of gaseous matter surround distant galaxies.

As regards to total energy content of matter, what is puzzling to us is that in general relativity Einstein talked about the effects of gravity on motion of all objects in the universe, yet he did not account for potential energy variations, when he considered the total energy content of mass in special relativity theory. He gave consideration to kinetic energy in his equations of mass equivalence of energy. In his later years Einstein did mention that his special relativity does not provide correct results in accelerating systems for which world lines of a points in the universe are curved. Long before Einstein formulated postulates of special and general theory of relativity, his tutor and mentor, Murkowski had introduced concept of coordinates of point p in the universe as comprised of four coordinates x, y, z and t. He stated that every point in the universe should be described as an event in space which has a location and time associated with it. To describe motion of objects, and points in the universe among different inertial systems, he developed a system of world lines. For inertial systems that were moving at constant velocity with respect to each other, the world lines of points in those systems were rectilinear and followed rules of Euclidian geometry. For the systems which were accelerating, the world lines of points in the systems were curved and

did not obey the rules of Euclidian geometry. In non-Euclidian geometry, the shortest distance between two points may not be a straight line.

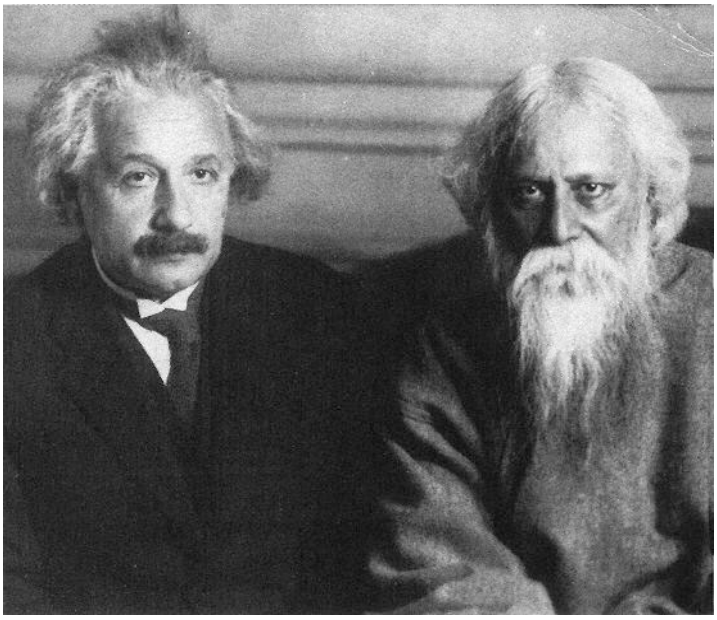

Figure 3.1 Albert Einstein with Rabindranath Tagore from India
Courtesy of New York Times, August 10, 1930

Read more…….

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3.3 Skylativity®: Sky's Theory of Special Relativity

In this section we shall describe postulates of special relativity theory as stipulated by K-theory. This is important as we shall see that it significantly affects the measurements of length, mass and time in space for different inertial systems. Specifically it simplifies computations velocities and acceleration of objects in different frames of reference. We state this because it eliminates the requirement of using complicated Lorentz transformation equations for scaling units of length, mass and time in different systems that are moving with respect to each other. The principles of special relativity of K-theory are as follows.

- Newton's Laws of classical mechanics are applicable to any frame of reference

including quantum mechanics. Although Einstein and others believed that the principles formulated by Newton failed at relativistic speeds, we believe it otherwise.

We firmly state this because speed of light from moving source does not depend on the speed of the source. Light waves are created solely because of change in energy of quantum particle electron as it undergoes through an energy state transition event. We shall look at the details of black body radiation in Chapter 9, when we shall study quantum ideas introduced by Max Planck to substantiate our beliefs.

- Light is a wave. The speed of light is not constant c. It varies in various media such as atmosphere, water, and glass and depends on frame of reference. Also, it is different for observers in relative state of motion with respect to light. The speed of light should be different for the observer who is traveling in space with speed v as compared to other inertial systems in which the speed of light is c from his frame of reference. The speed of light should be related by Galileo transformation [7]. ($c' = c + v$) for approaching and ($c' = c - v$) for receding scenario. Speed of light should be treated as a vector quantity. It should obey Newton's laws of motion for accelerating frames of reference.

The first systematic effort to indicate that speed of light is varying came from a Portuguese Professor João Magueijo in 1995 a research fellow in theoretical physics at Cambridge University. His work was published in Discover cover story [16]. It is astonishing fact that he stated that a varying speed of light (VSL) could actually explain where the cosmic unity (common basic matter on distant galaxies) of the universe comes from. Also, he suspected What if black holes aren't really holes after all? As we shall discover later in Chapter 8, that the views of this book coincides with his view. Furthermore, according to K-theory, the free space permeability constant μ_0 should not be treated as a constant value for a mobile frame of reference. It is a well known fact that the permeability constant depends on magnetic moment properties of constituent elements of matter. Also, frequency dependence of relative permeability of many magnetic materials has been studied extensively in modern times. Thus we have proved that speed of light should not remain constant but should vary in accordance with changes in μ_0 of the equation $c = (\mu_0\varepsilon_0)^{-1/2}$ km/s. More recently, variation of ε_0 and μ_0 is being investigated by researching professors at University of Michigan at Ann Arbor, Michigan for use in designing of very high frequency oscillator circuits.

- Whenever a material object attains the true absolute speed of light c (Refer to Chapter 4) for absolute speed c, with whatever cause or means, it will reach an unstable condition. It shall radiate light if electrons in constituent atoms attain an excited state and result in a transition event. When light is radiated, a portion of kinetic and potential energy of the electrons involved in the transition event will be transformed. The light energy released is expressed by relation (4.13) as indicated in Chapter 4.

- Wavelength λ of emitted light is characteristic of the atomic structure of the material. As a result of light emission, the energy level of the particles will decrease as stated

in equation (4.13). The velocity of the particle will decrease to some value below c to reach a stable state again. The resulting velocity of the particles can be computed from equation (4.12).

- In general, it is possible for a particle with finite rest mass to achieve the speed of light and even exceed the speed of light c as long as conditions for radiation events are avoided. The rest mass of the object should remain constant and should not increase with speed as predicted by Einstein's theory.

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About the Author

Shailesh Kadakia originally from Mumbai, India earned his graduate degree MSEE in Electrical Engineering with emphasis on computer technology from the University of Texas at Austin in May of 1981. He was awarded the National Science Foundation funding for research and thesis completion. From 1981 to 2001, Shailesh was employed as an Information Technology Engineer in several blue chip manufacturing corporations. During his 20-year IT career, he was issued five patents in computer technology (circuits and systems), and had published over 25 reports and papers in journals. He contributed toward the successful completion of VLSI projects at IC vendors National Semiconductor, Fairchild, Texas Instruments, Cirrus Logic, Motorola Semiconductor, Hewlett Packard, LSI Logic, Silicon Graphics, Entropic Communication and NxtWave Communication.

From 2003 to 2007, he directed his attention from the IT industry to the investment industry. During his three year career at MetLife Insurance and Primerica as an investment executive, he educated himself on financial and corporate management practices and laws. Simultaneously, he did extensive research and studies on relativity theory that lead to the creation of this book. Then, he founded start-up corporations Krypton Security Systems, Inc. on his own and MicroLink Inc. in partnership with an MIT graduate from Mainland Sam Tang. For proposing the idea of Smart Card for nation security, Shailesh was awarded Business Man of the year 2005 award from NRCC. From June 2008 to June 2009, he accepted employment at Harris Corporation's RFCD Division, Rochester, New York, as a Software Engineer Level 3. At Harris, he was routinely testing the Flacon III family of Soft Defined Radios designed for the U.S. defense department.

Shailesh is listed as an honored life member in the Cambridge Who's Who directory and is on the professional network of LinkedIn (http://www.linkedin.com/in/shaileshkadakia). His outside interests include swimming, sight-seeing, singing and spending time with friends. His favorite sports are tennis, volley ball and bowling. In the indoors, he likes to watch football, ice hockey and basketball, play chess and play billiards. Also, to relax, he likes to cook, visit Ellison Park, Rochester. He likes the people and community of Rochester where he is currently residing.

Finally, he enhanced the theory of relativity proposed by famous physicist Albert Einstein and complemented his work by postulating the new **Skylativity®** theory. He invites you to provide your feedback and comments on the subject matter of this book on his web site www.Matrixwriters.com. He will incorporate your suggestions when the next edition of the book is released.

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