

# INTRODUCTION

## 1.1. General:

By following the approach of classical physics, alternative concept presented in this book attempts to give logical and conceptual explanations of all physical phenomena, related to matter. A physical law should be based on a concept that should be simple enough to be conveyed in plain language. For this reason, aim of present book is to convey an alternative concept in simple language without use of complicated mathematics. All explanations in this text are with respect to a steady (absolute) external reference frame. 'Cause and effect relation' is strictly maintained in all explanations.

Science explains most of observed physical phenomena in universe. Some explanations vary in different contexts. There are some phenomena, which do not have satisfactory explanations. E.g.: Nature of matter and energy, development and reversion of 3D matter, nature of gravitation and other 'natural forces', binding of nucleons in an atom, collapse of macro bodies, nature of energy radiation, nature of electric charge, etc., to name a few. Many observed phenomena are explained on assumed fundamentals and basic reasons are not made clear. E.g.: structure of radiating energy particles, structure and creation of subatomic particles, conception and production of electric charge, cause of inertia and momentum, application of 'force' and many more.

This book is an attempt to explain 'matter' in all its forms, including its very basic nature. Matter and all its apparent interactions, starting from minutest particle to largest systems of matter (limited only by scope of book) are included in this text. When accepted and elaborated, this concept will give simple and satisfactory explanations to every physical phenomenon (related to matter), observed in nature.

## 1.2. Aim of this book:

By having a single foundational assumption and deriving a singular type of postulated matter-particle from foundational assumption, it is possible to develop a concept to explain all physical phenomena related to matter. If this concept, built upon ideal postulated matter-particles, can provide reasonable and logical explanations, it should be given a chance to develop into a full-fledged theory.

An alternative concept is proposed on nature and development of three-dimensional matter from postulated foundational matter-particles and their interactions in space, on contact. Characteristic properties of postulated unstructured matter-particle, derived from fundamental physical nature of unstructured matter, are so chosen that they are able to account for all physical properties of 3D matter, observable universe and all

apparent interactions in nature. When developed fully, this concept can lead towards a unified theory on matter and its interactions.

This concept does not aim to oppose any contemporary theories. Its aim is to present an alternative model that provides simple and logical explanations to all physical phenomena, including those, which do not currently have rational explanations and to provide lucid explanations to those, which do not have clear and logical explanations, without using multitudes of assumptions. At present, there are many theories in physics, which when taken together, contradict themselves but each one is good enough to explain a particular phenomenon. Attempts to explain contradictions become illogical and on many occasions, introduce virtual objects and unnecessary assumptions. Alternative concept, presented in this book, encompasses all apparent interactions of 3D matter under all conditions.

Matter, as we know it today, is a fact of our observation. It is the real substance; we actually come across in every day life. There is nothing virtual or imaginary about matter. It cannot exhibit different fundamental properties under different conditions. Fundamental properties of structured matter (3D matter-bodies) should be logically derived from properties of matter in its unstructured state. Fundamental laws of physics should hold true under all conditions. Most of contemporary physical theories are developed from observation of 3D matter-bodies and their apparent interactions. These theories attempt to construe and explain observed phenomena. Nevertheless, in this book, matter is defined and its nature is derived purely on theoretical basis from basic assumption on existence of matter. It is then compared with empirical data to show that real 3D matter-bodies themselves are not the basis of all that is observed.

Other than 'unstructured matter-particles', no other bodies (virtual or otherwise) are assumed or taken for granted in this concept. All unstructured matter-particles have definite form and properties to develop into all types of superior 3D matter-bodies. 3D matter-bodies, which we come across in nature, are developed through various steps of conversions of 'unstructured matter-particles' (without changing their fundamental nature) into more and more complicated and self-sustaining objects to form different types of fundamental particles and macro bodies, found in nature. These self-sustaining objects (despite the fact that they are made from similar unstructured matter-particles and in a similar manner), depending on their structure, exhibit diverse properties and (apparently) interact with each other in different ways.

Aim of this book is to supply logical and comprehensive explanations for all different behaviors and properties of 3D matter-bodies, suitable for all occasions. This is carried out by keeping aside all present-day assumptions and developing this concept from basic assumption and nature of 'unstructured matter-particle' itself. No abstract logical system can work on many basic assumptions. If a system of reasoning has more than few basic

assumptions, its chain of reasoning will no more be logical. Fewer the basic assumptions, more logical a system of reasoning will be. For this reason, only one type of matter-particles (derived from basic assumption) with definite properties is postulated. This one type of foundational matter-particles, called 'quanta of matter', on which this concept is based, is sufficient to account for all diverse phenomena observed in nature. Having single type of foundational matter-particles can avoid possibility of 'falsification' of this concept.

Author's meager resources limit this study. At this stage, not all conclusions in this text are claimed to be true. It is up to learned physicists to determine validity of these conclusions, after studying both, chain of reasoning and conclusions. Only claim made at present is that conclusions are logical consequences of only one basic assumption made in the beginning of book and it is better suited to (logically) explain all phenomena related to matter. All assumptions of present-day science are refuted and all actions are shown as results of preceding causes.

Many ideas and most of the conclusions, arrived at in this process, are contradictory to contemporary thinking and beliefs. This alone should not be considered as a disqualification. Reader is requested to give a verdict only after reading through full text at least once (in sequential order). All conclusions, in this book, are results of independent reasoning, starting from basic assumption and postulated foundational matter-particles. They are not based or linked to any of the existing theories other than basic physical laws. Even these laws are used only so much as necessary to provide explanations to points presented.

Kindly pursue this text with unbiased mind and patience. In order to understand chain of reasoning, followed in this book, it is necessary to follow the text in a sequential order, starting from chapter 2 until last chapter. As the text progresses, ideas expressed in it will become clear, logical and compatible with present-day observations. Simplicity of this concept is not in its basic development but once the basics of the concept and chain of its reasoning are understood, explanations for all physical phenomena become very simple and logical.

### **1.3. Scope of this book:**

Concept, proposed in this book, is about 'matter' in its fundamental form and hence it is bound to encompass most branches of science. Touching upon all physical phenomena of matter is beyond the scope of this book. This book plans to explain only basic principles of a concept (briefly) to provide an alternative, more logical and simpler explanations to some of the common phenomena about matter. Advanced study on specific phenomena can be done at a later stage. Additional explanations, acquired as a result of further studies or in answers to important queries from readers, will be added to future editions.

In the mean time, any such explanations and findings will be available for reference at author's website: presently, <http://www.matterdoc.info>

In formal or abstract logic that is used in mathematics, we have the advantage of being able to decide whether reasoning is valid without being psychologically influenced by statements. Notations given in mathematics have no specific meanings. They may be given many different meanings. Thus, it becomes much easier to tell a good reasoning from bad when arguments are exhibited in their skeleton form in notations. In this form, they are just 'propositional functions'. However, conclusions reached in mathematical treatments cannot be considered assertions until meanings are assigned to notations used. Only then, they become 'propositions'. Resulting statements may be true, false or nonsense. Consequently, similar conclusions reached mathematically (using propositional functions) in two sets of arguments do not guarantee similar conclusions, when propositions are used. This fact is often overlooked by those who insist on mathematical treatments as the sole criteria for a good theory. Concept in this book is based on deductive logic rather than on mathematical derivations.

Only real matter-bodies can have (inertial) motion in space and we accept 3D matter-bodies as the only real matter bodies. Hence, 'field forces' or (inertial) actions can exist only in relation to 3D matter-bodies. Although universal medium and quanta of matter (considered in this book) are real matter-bodies, being not in 3D status, they are not accepted so. For the present, they may be considered as functional entities. In order to consider (inertial) actions on quanta of matter and generation of actions in universal medium, a new system has to be evolved on the basis, which takes quanta of matter as real matter-bodies. Functional terms, like a spatial plane has to be defined in terms of its real thickness, etc. Only then, accurate mathematical evaluations of actions in universal medium are possible.

Any good concept should be explainable in plain and simple language. Therefore, as far as possible, explanations avoid use of mathematics and attempt to develop a chain of reasoning in simple everyday language. In most cases, calculations required are (repetitions of) those currently existing in practice. Most units of measurements, constants of proportion and calculations, used at present, are based on 'SI unit' of 'mass'. Units and measurements of 'mass' are defined in relation to Avogadro's number, which this concept does not consider to be correct.

In addition, currently, 'mass' of a matter-body (representing its matter-content) is dependent not only on its matter-content but also on its velocity. Without an absolute reference, real velocity of a 3D matter-body in space cannot be determined. This view is also slightly modified in this concept. Another hindrance to presentation of calculations is accepting prominence of work as real entity to replace contemporary undefined functional entity of 'energy'. Even those simple calculations, presented here, are rough

and their results are only approximate. Calculations presented in this text are in relation to present units and formulas. Often, unit measurements are not used and instead calculations are presented in abstract form. They are to be viewed by keeping these restrictions in mind.

A 3D matter-particle or a composite macro body, which is independent of all external influences (other than gravitational effects) and that can respond independently to external stimulations is referred, in this book, as a free body. Free space is a region of space that is devoid of all 3D matter-particles or macro bodies except the matter-particle or macro body considered, if any. Each spectator observes a 3D matter-body relative to himself. Hence, parameters of a 3D matter-body, estimated by the use of relative parameters observed by him are not scientifically correct. (Some of current fundamental theories are based on relative or apparent parameters rather than absolute parameters of a 3D matter-body). Correct parameters of a 3D matter-body are relative to an absolute reference. Universal medium, explained in this book, provide a reference nearest to an absolute reference.

In this concept, term 'force' is substituted by 'effort' to mean cause of an action. There is no notion of 'pull' efforts. All efforts and their resultants are of 'push' nature. However, in order to make some explanations clearer, present convention of efforts being of 'pull' nature is also used. Difference is that 'pull' efforts are represented by arrows away from point of application and 3D matter-body is presumed to follow effort, in its motion. In case of 'push' effort, arrows representing efforts are directed towards the point of application and 3D matter-body precedes the effort.

As far as possible, conventional names of particles and effects are used (though some times they do not mean exactly the same) in this text. All such names are to be understood only in the context of this book and as given in 'Glossary'. Explanations, given in this book, are brief and limited to points, just enough to give parallel, but more logical interpretations of various phenomena, based on initial assumption and postulated matter-particle. Very few notes/references on contemporary theories are included in this book. They are mentioned only to emphasize differences and deviations of this concept from existing theories, rather than as a criticism of any sort. Readers may draw up full comparison with contemporary theories, on their own. Figures are not drawn to scale. All figures are depicted to emphasize details of associated explanations.

#### **1.4. Interaction:**

This book is only a theoretical approach, within the very limited facilities available to me. My intention is to present these ideas to learned persons of science for critical evaluation. Detailed study on this concept and mathematical and experimental confirmations, wherever necessary, can be attempted at a later stage. I am aware of the

fact that condensing explanations, neglect of mathematical descriptions and inefficient usage of language might have reduced clarity of my presentation. Reader is requested to forgive this shortcoming and pursue the text without prejudice and bias. This book is not edited or reviewed by experts.

Kindly beware that you will come across some statements, which are or seem to be bizarre and against well-established and widely followed norms. Do not be discouraged or tempted to abandon reading. Please proceed to pursue the text and reasons for such statements will be made clear, as you proceed in a sequential order. Most important thing while reading this book is to have an open mind. Taking any part of the text in isolation (without having followed chain of reasoning) can cause confusion. Once a reader grasps chain of reasoning, this concept will become very simple and logical.

Basic idea presented in this text is nothing new. When 'Christiaan Huyghens' proposed wave theory of light, it was assumed that light is propagated in the form of waves through an all-pervading hypothetical medium called, aether. As physics advanced, other radiations were also included with light, in common heading of electromagnetic waves. Still later, as existence of aether could not be proved, notion of a propagating medium was gradually lost. Nevertheless, idea of radiation being in the form of waves is still maintained. At present, it is assumed that these waves of radiations are propagated through empty space and no material-continuity of space is needed for transmission of electromagnetic waves. This is clearly not logical.

In this concept, it is seen that an all-pervading universal medium does exist and it is called, in this book, by name 'universal medium' instead of aether. Considering a real materialistic propagating medium, in place of hypothetical medium 'aether' (although it is only a functional entity but no more a hypothetical one), universal medium is given specific characteristic properties. By having a medium of propagation, for all wave like radiations, such phenomena become more logical. Having an all-encompassing universal medium does away with 'actions at a distance through empty space'. All other ideas expressed here are developed from this basic idea.

Due to blind faith in some of the most fundamental theories, few errors have crept into earlier editions of this book. They are corrected in this edition. Any other errors noticed during further studies will be corrected later. I believe that our observation and empirical science cannot wholly be free from theoretical hypothesis. Hence, I humbly submit this book for your critical scrutiny. I hope and wish you would let me know your frank and honest opinion. Volunteers are welcome to undertake (independent) experiments and mathematical calculations to confirm or disprove conclusions in this book. All criticisms, suggestions for improvement and queries are most welcome. Kindly address them to: Nainan K. Varghese, Thiruvinal House, Adoor.P.O, Kerala State, 691 523, India or <mailto:matterdoc@gmail.com>.

Major errors noticed in the books and their corrections are published on author's website. Readers kindly refer to <http://www.matterdoc.info/materrata.pdf>

In view of feedbacks received, after the publication of first and second editions of 'Hypothesis on MATTER', it has become necessary to add more details to explanations on few phenomena. Continued study on the concept has changed certain ambiguous views expressed in earlier editions of this concept. However, basic concept is not changed. Few more topics are included and explanations on certain topic are elaborated, in this edition. Therefore, it is appropriate to publish this edition of book and change its name from 'Hypothesis on MATTER' to 'MATTER (Re-examined)'. Due to huge size of the book, it is published in two volumes.

I would like to express my heartfelt gratitude to Josey John, M.Tech. and Anita Varghese, without whose help and encouragement, this project could not reach this stage.

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