Nature and Constitution of Light Quanta

Production and Transformation of Radiation

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The radiation problem

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Einstein quotes

“I want to know God’s thoughts, the rest are mere details”

“When the solution is simple, God is answering”

“Genius is 1% talent and 99% percent hard work”

“Everything that is really great and inspiring is created by the individual, who can labor in freedom”

“It is not that I’m so smart. But I stay with the questions much longer”

“Blind belief in authority is the greatest enemy of truth”

“Do you really believe that the moon isn’t there when nobody looks?”

“I never made one of my discoveries through the process of rational thinking”

“It would be possible to describe everything scientifically, but it would make no sense; it would be without meaning, as if you described a Beethoven symphony as a variation of wave pressure”

Newton quotes

“Nature is pleased with simplicity. And nature is no dummy”

“It is the perfection of God’s works that they are all done with the greatest simplicity. He is the God of order and not of confusion...”

“If I have seen further it is by standing on the shoulders of Giants”

“If I have ever made any valuable discoveries, it has been due more to patient attention, than to any other talent”

“I keep the subject constantly before me, and wait ‘till the first dawnings open slowly, by little and little, into a full and clear light”

“No great discovery was ever made without a bold guess”

“You have to make the rules, not follow them”

“Men build too many walls and not enough bridges”

Foreword

Einstein spent a great deal of time contemplating '*the radiation problem*'. However, he did not reach a satisfactory solution. Dismayed, he wrote in 1951 to Besso: "All these fifty years of pondering have not brought me any closer to answering the question, What are light quanta?".

In the later years of his life Einstein came to the conclusion that physics would have to start all over again, i.e. not to use quantum mechanics as a starting point. The following observation was surprising to me. Newton's concept of absolute time and space is the basis of his most important works, and hence of classical physics. However, it is only explained in words. An exact definition – in which the physical properties of absolute time and space are made explicit – is missing from the world of physics. There is no model-based mathematical framing of the non-relativistic assumption that time progresses at equal velocity always and everywhere. The new theory provides such an exact definition and elaborates on its consequences for light. Thus, it goes back to the 17th century as a starting point.

Another observation: there is no exact integration of special relativity theory and the light-quantum hypothesis in which such a unification simply follows from first principles, so without the use of wave functions and probabilities. Has enough consideration been given to whether a second, the Hertz unit of time, elapses at equal velocity for all photons?

The new quantum theory presented in this book once again takes on the radiation problem, based on the requirements set by Einstein. It answers the above raised question in a revolutionary way by providing a truly classical mechanical reconstruction of the Planck constant as an exact description of the light-quantum hypothesis. The new theory seems like a trick, much like the Planck constant first seemed to be. The theory is mathematically simple, since it is exclusively based on first principles. Even so, the book's subject matter is complex. This book assumes that readers have knowledge of special relativity, optics and of classical and quantum mechanics.

The relationship between the new deterministic theory and modern quantum mechanics – i.e. wave functions and probabilities – is not part of this book. This book is structured using similar formatting to that used for Einstein's special relativity article.

I hope to generate constructive reactions from readers who consider themselves experts or who have something of value to add. That may

lead to amendments, for example if the contents were to be reprinted. It could also lead to new findings or scientific articles. If you wish to contribute to the further elaboration, presentation or implications of my new theory, or to popularise it, please contact me:

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An associated full text book will become available soon, containing more background information, more validation and elaborated interpretation (see footnote 5). Most of its content will be similar to this publication, however. It is possible that the role of gravity and suggestions for incorporating statistical features will be dealt with in later works.

I dedicate my book to Lorentz. He was without a doubt the greatest physicist the Netherlands have ever produced. In my opinion Einstein, Lorentz and Newton are the greatest physicists of all time. Their revolutionary ideas have improved our understanding of the universe.

Finally, all that remains is for me to wish you a pleasant read!