

Preface

To begin with a warning: the contents of this book may be controversial.

The readers the author had in mind when writing this book are interested laymen, typically the kind of reader who searches bookshops for the latest popular-scientific books on developments in cosmology, on recently found fundamental particles, or on the ever more magical findings of quantum physics. These readers presumably have some background of classical school physics (although most of it may have been forgotten). It is the kind of reader who does not like to be bothered with formulae or is even allergic to them, but who has the interest and tenacity to read sentences twice if necessary. But complete novices in the matters of the atomic world should be warned: the stories told in this book are *not* the same as usually found in books about quantum phenomena. This book does *not* give the conventional explanations. In order to read the usual stories, it is better to start in one of the many other popular-scientific books.

What then is this book about? This book certainly does not pretend to contain a new theory of quantum mechanics, nor does it have the intention. Quantum theory in its present form is an almost perfect tool to calculate the behaviour of elementary particles. But the theory is “strange”, it is not something that intuitively can be understood. What this book tries to add are visualisations or mental pictures, closer to the intuition, because they are based on classical physics. However, the mental pictures in this book are not just half-baked analogies or metaphores, they are solidly founded on a large body of mathematical theory (for the diehards: the theory can be found in the appendix). This aspect makes this book different from other popular-scientific books.

Readers who just want to get a “quick” (60 odd pages long) impression are advised to read the first chapter and may stop there. This would be sufficient to get an acquaintance with the main ideas. If you still have some patience left, you might want to browse through Chap. 2 and the later Chaps. 14 and 15 too. Chapter 2 gives a more complete list of strange quantum phenomena than Chap. 1. Chapter 14 then goes through the entire list of quantum oddities again, together with the interpretations suggested by the theory developed in this book. They are interpretations in terms of everyday physics, intended to free quantum mechanics from its magical

image and weirdness, and making everything more intuitively understandable. Finally, the more speculative Chap. 15 is about the really big magic: telepathic (“spooky”) contact between particles, particles that at the same time can be in different places, “Schrödinger’s cat” and more.

Even more efficient: people who do not need a refresher about the contributions to quantum theory by Planck, Einstein, Bohr, De Broglie and Schrödinger can skip the first part of Chap. 1 until Sect. 1.9. It will save them some 25 pages of reading, because the new stuff begins in Sect. 1.9. The remainder of Chap. 1 gives a global outline of the ideas developed by the author. It is a global outline, many more details and the dotting of the i’s will be found in later chapters.

It is not strictly forbidden that professional physicists also read this book, but they are less likely to feel a need for an understanding of quantum phenomena in terms of classical laws of nature, since they are used to the strange aspects of quantum mechanics and probably do not find them “strange” anymore. Many professionals will as a first reaction even deny that it is possible at all to “explain” quantum theory in terms of classical physics. They will probably consider this book as heresy. However, if they want to assess whether the stories told in this book are utter nonsense or whether they contain more truth than just fairy tales, they are referred to the—peer-reviewed—mathematical appendix.

Let it serve as a warning for the general reader: this book will be controversial. But form your own opinion. Hopefully you find it enjoyable reading anyway.

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