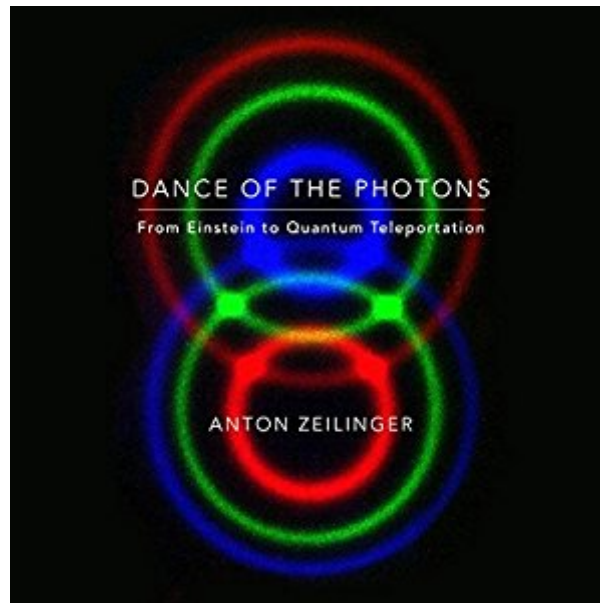




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Dance Of The Photons: From Einstein To Quantum Teleportation



Synopsis

Einstein's steadfast refusal to accept certain aspects of quantum theory was rooted in his insistence that physics has to be about reality. Accordingly, he once derided as spooky action at a distance the notion that two elementary particles far removed from each other could nonetheless influence each others properties - a hypothetical phenomenon his fellow theorist Erwin Schrodinger termed quantum entanglement. In a series of ingenious experiments conducted in various locations - from a dank sewage tunnel under the Danube River to the balmy air between a pair of mountain peaks in the Canary Islands - the author and his colleagues have demonstrated the reality of such entanglement using photons, or light quanta, created by laser beams. In principle, the lessons learned may be applicable in other areas, including the eventual development of quantum computers.

Book Information

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Customer Reviews

"Dance of the Photons" is a remarkable book. I recommend it to all who have an interest in modern physics. Surprisingly, it requires very little modern physics background, being written for non professional readers. The world appears on the threshold of a huge and fundamental breakthrough in fundamental physics, the most fundamental in the history of theoretical physics, being led by the Institute located in Vienna (Austria). For years, Einstein taught that the speed of light is a fundamental maximum for the transmission of information; a teaching that now appears to be wrong, in spite of Einstein's endorsement. There is indeed, compelling evidence that information can be transmitted at higher speeds than "c", with practical demonstrations of essentially

instantaneous propagation over paths in excess of several hundred Kilometers demonstrated with relative ease. Remarkably, this book avoids obscure theoretical demonstrations, and is, indeed, readable by the average technically inclined reader without using obscure or hard to understand mathematics. The examples presented are straightforward and easy to grasp by readers with little more than High School education. Not all implications are developed in detail, and any imaginative reader will have much to inspire his or her imagination! There are other treatments of the same principles for those who prefer more obscure treatments, but there is sufficient "meat" here to shake your belief in the completeness of contemporary modern physics ... and give you pause in contemplating what the implications will be over the next few decades. Those implications are profound, to say the least! Thank you, Anton Zeilinger and team!

This is a beautifully written book, describing for the layman the central mystery of quantum mechanics- Entanglement. Zeilinger also describes how an extremely insightful physicist, John Bell, figured how to do something extremely unusual; i.e., to employ actual scientific experiments to answer deep philosophical questions about the nature of reality and causality. The basic scientific question Bell figured out how to address was: Do two particles in contact, that are about to be separated but remain entangled, contain a set of instructions such that, when they have been separated, even by millions of light-years, measurement of a variable of one particle allows the other particle to "know" immediately the result of that measurement. And the experimental investigations of this question (including an important one by the author's group that ruled out any role in entanglement for communication between measurement devices) have forced us to the conclusion that we must in fact greatly modify- indeed virtually abandon- our intuitive notions of reality and causality. I am a physicist, and I certainly gained insights from this book. I highly recommend it to anyone, scientist or no, who wants to gain an understanding of quantum mechanics, a branch of physics that simultaneously strikes us macroscopic humans as completely whacky, but is also by far the most precisely experimentally validated theory to ever come down the pike. Carter Bancroft

The first book God used to start me on the path to Yeshua's light in His glory! Yehway is the great observer which keeps all the known existence from blinking out of existent.

Excellent book for the armchair Quantum Physicist, no math at all, everything is very clearly described by dr. Zeilinger. I'd recommend the book to everybody who reads English and likes

physics and Nature (the bitch, not the magazine).

I'm a geek for this stuff. Good for those of us who dabble in Physics from sheer curiosity but do not actively practice the discipline.

Very good book

Good non mathematical explanations but important concept of hidden variables not clear enough. Ie why are they not an explanation for the weird effects of delayed choice experiments.

Alice and Bob metaphors are not the most interesting way to explain physics. The text becomes tedious and monotonous, we spend too much time trying to understand metaphors, side subjects, instead of going straight to the main points.

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