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2nd International Conference on

QUANTUM PHYSICS AND QUANTUM TECHNOLOGY

September 25-26, 2017 Berlin, Germany



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A new approach to quantum mechanics

I discuss in my talk the reformulation of quantum mechanics in which each quantum system, at any time is described by two Hilbert space vectors rather than one. One of the vectors propagates from past boundary condition towards the present and the other propagates back to the present from a future boundary condition. I will show that this reformulation uncovers a host of fascinating new phenomena, some of which will be described in detail within this talk. Finally, I will show that this new reformulation suggests a novel solution to the notorious problem of the Quantum Measurement.

Biography

Yakir Aharonov, Ph.D., is professor of theoretical physics at Chapman University, where he holds the James J. Farley Professorship in Natural Philosophy. Considered one of the most highly regarded scientists in the world, Dr. Aharonov received the prestigious Wolf Prize in 1998 for his co-discovery of the Aharonov-Bohm Effect, one of the cornerstones of modern physics. He is also recipient of the 2009 President's National Medal of Science, "for his contributions to the foundations of quantum physics and for drawing out unexpected implications of that field ranging from the Aharonov-Bohm effect to the theory of weak measurement." He is one of the authors to the book "Quantum Paradoxes" along with Dr. Daniel Rohrlich, Ben Gurion University of the Negev, Israel. The book is a pioneering work on the remaining mysteries of quantum mechanics.

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