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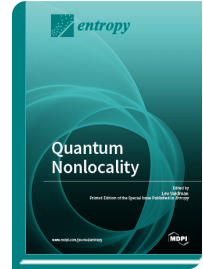
Quantum Nonlocality

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This book presents the current views of leading physicists on the bizarre property of quantum theory: nonlocality. Einstein viewed this theory as “spooky action at a distance” which, together with randomness, resulted in him being unable to accept quantum theory. The contributions in the book describe, in detail, the bizarre aspects of nonlocality, such as Einstein–Podolsky–Rosen steering and quantum teleportation—a phenomenon which cannot be explained in the framework of classical physics, due its foundations in quantum entanglement. The contributions describe the role of nonlocality in the rapidly developing field of quantum information. Nonlocal quantum effects in various systems, from solid-state quantum devices to organic molecules in proteins, are discussed. The most surprising papers in this book challenge the concept of the nonlocality of Nature, and look for possible modifications, extensions, and new formulations—from retrocausality to novel types of multiple-world theories. These attempts have not yet been fully successful, but they provide hope for modifying quantum theory according to Einstein’s vision.



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