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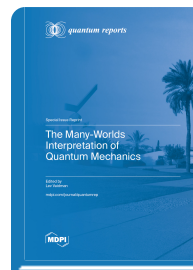
The Many-Worlds Interpretation of Quantum Mechanics

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Next year, there will be a 100-year celebration of quantum mechanics, but there is no consensus on the interpretation of this theory. This reprint presents recent works on one of the most intriguing interpretations, the many-worlds interpretation, presented at a workshop in October 2022 at Tel Aviv University. The many-worlds interpretation solves the measurement problem, avoids action at a distance and indeterminism, and does not contradict empirical evidence. The main question discussed in the workshop was as follows: why is it not in the consensus? Major issues such as preferred basis, the meaning of probability, non-locality, and alternative approaches were discussed, which are increasingly drawing attention in physics and philosophy. The contributions demonstrated a striking diversity in understanding the basic concepts. What are the worlds in the many-worlds interpretation? Do the worlds diverge or split? Is probability objective or subjective, or is it just an illusion? Can we avoid the non-separability of quantum mechanics? Many questions were raised and significant progress in understanding was achieved, but the papers showed that consensus is still far away. This reprint describes the current status of the research and will be invaluable for physicists and philosophers who want to resolve the long-standing problem of the interpretation of quantum mechanics.



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