Many Worlds?

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This book brings together an illustrious team of philosophers and physicists to debate these questions. The contributors broadly agree on the need, or aspiration, for a realist theory that unites micro- and macro-worlds. But they disagree on what this implies. Some argue that if unitary quantum evolution has unrestricted application, and if the quantum state is taken to be something physically real, then this universe emerges from the quantum state as one of countless others,constantly branching in time, all of which are real. The result, they argue, is many worlds quantum theory, also known as the Everett interpretation of quantum mechanics. No other realist interpretation of unitary quantum theory has ever been found.Others argue in reply that this picture of many worlds is in no sense inherent to quantum theory, or fails to make physical sense, or is scientifically inadequate. The stuff of these worlds, what they are made of, is never adequately explained, nor are the worlds precisely defined; ordinary ideas about time and identity over time are compromised; no satisfactory role or substitute for probability can be found in many worlds theories; they cant explain experimental data; anyway, there areattractive realist alternatives to many worlds.Twenty original essays, accompanied by commentaries and discussions, examine these claims and counterclaims in depth. They are organized according to questions of ontologythe existence of worlds; probabilitywhether and how probability can be reduced to the branching structure of the quantum state; alternatives to many worldswhether there are one-world realist interpretations of quantum theory that leave the Schr--ouml--;dinger equation unchanged; and open questions even given many worlds,including the multiverse concept as it EAN/ISBN : 9780191576492 Publisher(s): Oxford University Press Format: ePub/PDF Author(s): Saunders, Simon - Barrett, Jonathan - Kent, Adrian

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