1. Record Nr. UNINA9910741166003321 Information and Interaction: Eddington, Wheeler, and the Limits of Titolo Knowledge / / edited by Ian T. Durham, Dean Rickles Pubbl/distr/stampa Cham:,: Springer International Publishing:,: Imprint: Springer,, 2017 **ISBN** 3-319-43760-7 Edizione [1st ed. 2017.] 1 online resource (XXIII, 212 p. 22 illus., 11 illus. in color.) Descrizione fisica The Frontiers Collection, , 1612-3018 Collana Disciplina 121 Soggetti **Physics** Philosophy and science Quantum computers **Spintronics** History and Philosophical Foundations of Physics Philosophy of Science **Quantum Computing** Quantum Information Technology, Spintronics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di bibliografia Includes bibliographical references at the end of each chapters and index. Nota di contenuto Boundaries of Scientific Thought (I. Durham) -- Eddington's Limits of Knowledge: The Role of Religion (M. Stanley) -- Eddington's Dream: A Failed Theory of Everything (H. Kragh) -- All Possible Perspectives: A (Partial) Defence of Eddington's Physics (D. Rickles) -- Tracing the Arrows of Time (F. Weinert) -- Constructor Theory of Information (C. Marletto) -- On Participatory Realism (C. A. Fuchs) -- Toward Physical Realizations of Thermodynamic Resource Theories (N. Y. Halpern) --Merging Contradictory Laws: Imagining a Contructive Derivation of Quantum Theory (W. K. Wootters) -- Understanding the Electron (K. H. Knuth). In this essay collection, leading physicists, philosophers, and historians Sommario/riassunto attempt to fill the empty theoretical ground in the foundations of information and address the related question of the limits to our

knowledge of the world. Over recent decades, our practical approach to

information and its exploitation has radically outpaced our theoretical understanding - to such a degree that reflection on the foundations may seem futile. But it is exactly fields such as quantum information, which are shifting the boundaries of the physically possible, that make a foundational understanding of information increasingly important. One of the recurring themes of the book is the claim by Eddington and Wheeler that information involves interaction and putting agents or observers centre stage. Thus, physical reality, in their view, is shaped by the questions we choose to put to it and is built up from the information residing at its core. This is the root of Wheeler's famous phrase "it from bit." After reading the stimulating essays collected in this volume, readers will be in a good position to decide whether they agree with this view.