



100 years of relativity [space-time structure : Einstein and beyond /

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Monografía

"Thanks to Einstein's relativity theories, our notions of space and time underwent profound revisions about a 100 years ago. The resulting interplay between geometry and physics has dominated all of fundamental physics since then. This volume contains contributions from leading researchers, worldwide, who have thought deeply about the nature and consequences of this interplay. The articles take a long-range view of the subject and distill the most important advances in broad terms, making them easily accessible to non-specialists. The first part is devoted to a summary of how relativity theories were born (J Stachel). The second part discusses the most dramatic ramifications of general relativity, such as black holes (P Chrusciel and R Price), space-time singularities (H Nicolai and A Rendall), gravitational waves (P Laguna and P Saulson), the large scale structure of the cosmos (T Padmanabhan); experimental status of this theory (C Will) as well as its practical application to the GPS system (N Ashby). The last part looks beyond Einstein and provides glimpses into what is in store for us in the 21st century. Contributions here include summaries of radical changes in the notions of space and time that are emerging from quantum field theory in curved space-times (Ford), string theory (T Banks), loop quantum gravity (A Ashtekar), quantum cosmology (M Bojowald), discrete approaches (Dowker, Gambini and Pullin) and twistor theory (R Penrose)"--Provided by publisher

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-- Probing space-time through numerical simulations P. Laguna. -- Understanding our universe : current status and open issues T. Padmanabhan. -- Was Einstein right? : testing relativity at the centenary C.M. Will. -- Receiving gravitational waves P.R. Saulson. -- Relativity in the global positioning system N. Ashby. -- Spacetime in semiclassical gravity L.H. Ford. -- Space time in string theory T. Banks. -- Quantum geometry and its ramifications A. Ashtekar. -- Loop quantum cosmology M. Bojowald. -- Consistent discrete space-time R. Gambini, J. Pullin. -- Causal sets and the deep structure of spacetime F. Dowker. -- The twistor approach to space-time structures R. Penrose

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