

1. Record Nr.	UNINA9910373934403321
Titolo	Category Theory in Physics, Mathematics, and Philosophy // edited by Marek Ku, Bartomiej Skowron
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-30896-0
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (XII, 134 p. 3 illus., 1 illus. in color.)
Collana	Springer Proceedings in Physics, , 0930-8989 ; ; 235
Disciplina	530.15
Soggetti	Physics Category theory (Mathematics) Homological algebra Mathematics—Philosophy Quantum physics Mathematical physics Mathematical Methods in Physics Category Theory, Homological Algebra Philosophy of Mathematics Quantum Physics Mathematical Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Why Categories? -- Category Theory and Philosophy -- Comments on: Category Theory and Philosophy by Zbigniew Krol -- Are There Category-Theoretical Explanations of Physical Phenomena? -- The Application of Category Theory to Epistemic and Poietic Processes -- Asymmetry of Cantorian Mathematics from a Categorical Standpoint: Is It Related to the Direction of Time? -- Extending List's Levels -- From quantum-mechanical lattice of projections to smooth structure of R^4 -- Beyond the Space-Time Boundary -- Aspects of Perturbative Quantum Gravity on Synthetic Spacetimes -- Category Theory as a Foundation for the Concept Analysis of Complex Systems and Time Series.

The contributions gathered here demonstrate how categorical ontology can provide a basis for linking three important basic sciences: mathematics, physics, and philosophy. Category theory is a new formal ontology that shifts the main focus from objects to processes. The book approaches formal ontology in the original sense put forward by the philosopher Edmund Husserl, namely as a science that deals with entities that can be exemplified in all spheres and domains of reality. It is a dynamic, processual, and non-substantial ontology in which all entities can be treated as transformations, and in which objects are merely the sources and aims of these transformations. Thus, in a rather surprising way, when employed as a formal ontology, category theory can unite seemingly disparate disciplines in contemporary science and the humanities, such as physics, mathematics and philosophy, but also computer and complex systems science.
