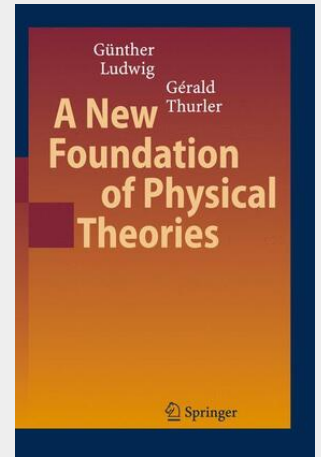


## A New Foundation of Physical Theories

(translation) I was interested by the development of a new edition of the book [1] "Die Grundstrukturen einer physikalischen Theorie." This has been possible, in spite of my old age, thanks to the contributions of Dr. G. Thurler. Without his indefatigable support and his essential and fundamental propositions, this new edition would not have been possible. The new edition clarifies and formulates more precisely the fundamental ideas of physical theories in order to avoid as much as possible any ambiguities. One begins theoretical physics with concepts that can be explained without theories. Later, one introduces other concepts by theories known as "pre-theories." Thus it does not make sense to introduce concepts such as "state" without a pre-theory. The field of physics is thus determined by the basic concepts introduced without the use of pre-theories. Also, it does not make sense to speak about the position and speed of an electron at a fixed time. "Reality" is not however only the reality which is described by physical concepts. Thus, for example, colors, tones, joy, hate, and love are not physical concepts. But the demarcation of the physical concepts, and thus the demarcation of the field of physics makes it possible to know more clearly, and thus to describe more clearly in the future, the structure of reality beyond the domain of physics. The field of life and not that of death should be the goal of mankind. Thus, I hope that this book can also become another small step for life.

Written in the tradition of G. Ludwig's groundbreaking works, this book aims to clarify and formulate more precisely the fundamental ideas of physical theories. By introducing a basic descriptive language of simple form, in which it is possible to formulate recorded facts, ambiguities of physical theories are avoided as much as possible. In this approach the field of physics that should be described by a theory is determined by basic concepts only, i.e. concepts that can be explained without a theory. In this context the authors introduce a new concept of idealization and review the process of discovering new concepts. They believe that, when the theories are formulated within an axiomatic basis, solutions can be found to many difficult problems such as the interpretation of physical theories, the relations between theories as well as the introduction of physical concepts. The book addresses both physicists and philosophers of science and should encourage the reader to contribute to the understanding of the lasting core of physical knowledge about the real structures of the world.



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