

Models as a Tool for Theory Construction: Some Strategies of Preliminary Physics

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Abstract

Theoretical models are an important tool for many aspects of scientific activity. They are used, i.a., to structure data, to apply theories or even to construct new theories. But what exactly is a model? It turns out that there is no proper definition of the term "model" that covers all these aspects. Thus, I restrict myself here to evaluate the function of models in the research process while using "model" in the loose way physicists do. To this end, I distinguish four kinds of models. These are (1) models as special theories, (2) models as a substitute for a theory, (3) toy models and (4) developmental models. I argue that models of the types (3) and (4) are considerably useful in the process of theory construction. This will be demonstrated in an extended case-study from High-Energy Physics.

Subjects: [General Issues: Models and Idealization](#)
[Specific Sciences: Physics: Quantum Field Theory](#)

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