

Similarity and Dimensional Analysis (forthcoming entry in Handbook of Philosophy of Science, Elsevier)

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Abstract

The topic of this Handbook entry is the relationship between similarity and dimensional analysis, and some of the philosophical issues involved in understanding and making use of that relationship.

Discusses basics of the relationship between units, dimensions, and quantities. It explains the significance of dimensionless parameters, and explains that similarity of a physical systems is established by showing equality of a certain set of dimensionless parameters that characterizes the system behavior. Similarity is always relative -- to some system behavior. Other topics discussed: generalization of the notion of similarity, the difference between relative similarity and partial similarity; how the notion of similarity in science differs from similarity as it has been discussed in recent philosophy. Philosophers' views discussed: R. Giere, N. Goodman, P. Bridgman, and B. Ellis.

Keywords: Similarity, Models, Physical Similarity, Dimensions, Dimensionless, Dimensional Analysis, Units, Systems of units

Subjects: [General Issues: Models and Idealization](#)
[Specific Sciences: Physics: Symmetries/Invariances](#)
[General Issues: Experimentation](#)

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