

Scientific Metaphysics

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Abstract

In this paper I argue that physics makes metaphysical presuppositions concerning the physical comprehensibility, the dynamic unity, of the universe. I argue that rigour requires that these metaphysical presuppositions be made explicit as an integral part of theoretical knowledge in physics. An account of what it means to assert of a theory that it is unified is developed, which provides the means for partially ordering dynamical physical theories with respect to their degrees of unity. This in turn makes it possible to assess the empirical fruitfulness of (some) metaphysical theses, in terms of the extent to which they play a role in empirically progressive scientific research programmes. A new conception of physics is developed which makes metaphysical theses an integral part of physics and which, at the same time, makes it possible to assess such theses in terms of their empirical fruitfulness. Circularity objections are rebutted.

Keywords: Science, Metaphysics, Scientific Method, Unification, Scientific Progress, Scientific Realism, Physicalism, Explanation, Comprehensibility.

[General Issues: Structure of Theories](#)

Subjects: [General Issues: Theory Change](#)

[Specific Sciences: Physics](#)

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