

AKPhil 5: Structuralism and Realism

Zeit: Donnerstag 14:00–15:00

Raum: KIP SR 3.401

AKPhil 5.1 Do 14:00 KIP SR 3.401

Two Kinds of Simulations – A Structuralist Approach —
 •CLAUS BEISBART — Institut für Philosophie, Universität Dortmund,
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Computer simulations are all the rage in present-day physics. They help to understand the large structure of the Universe, complex fluids or traffic flows. But what are simulations? And what is their role between theories, models and observations?

To answer these questions, I take the structuralist approach (advocated by Balzer, Moulines and Sneed, for instance). The basic idea is to model algorithms as theory elements. Links to other theory elements provide a way to understand how the outputs of simulations get their meaning and relate to theories and models.

I use two kinds of simulations to illustrate my approach. The first example is very straight-forward, whereas, in the second example, which is drawn from cosmology, the simulations come along with their own ontology. Drawing on my second example, I show how simulations change the way physics works.

AKPhil 5.2 Do 14:30 KIP SR 3.401

Intermediate Structural Realism — •HOLGER LYRE — Department of Philosophy, University of Bonn /University of Bielefeld

Structural realism (SR) is the view that our ontological commitment should be focused on the structural rather than object-like content of our best and mature physical theories. As such, SR is considered to come in two flavours: Epistemic SR is based on the idea that objects may exist, but that it is only the object's structural relations to which we have epistemic access. Ontic SR, on the other hand, is the radical claim that, literally, structures is all there is.

In the first part of my talk I will argue for some more refined intermediate positions between ESR and OSR, and evaluate them on the basis of the group structural content of modern gauge theories. In the second part I will set out what I consider to be one of the major problems of SR: the apparent ambivalence of the notion of structure and the possibility of structural underdetermination. I will end with a discussion of the question whether in the case of gravitational theories we are provided with an example of structural underdetermination.