

The modal nature of structures in ontic structural realism

Esfeld, Michael (2009) The modal nature of structures in ontic structural realism.

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Abstract

Ontic structural realism is the view that structures are what is real in the first place in the domain of fundamental physics. The structures are usually conceived as including a primitive modality. However, it has not been spelled out as yet what exactly that modality amounts to. This paper proposes to fill this lacuna by arguing that the fundamental physical structures possess a causal essence, being powers. Applying the debate about causal vs. categorical properties in analytic metaphysics to ontic structural realism, I show that the standard argument against categorical and for causal properties holds for structures as well. Structural realism, as a position in the metaphysics of science that is a form of scientific realism, is committed to causal structures. The metaphysics of causal structures is supported by physics, and it can provide for a complete and coherent view of the world that includes all domains of empirical science.

Keywords: categorical properties, causal properties, causation, Humeanism, quantum entanglement, scientific realism, structural realism, underdetermination

Subjects: [Specific Sciences: Physics](#)

ID Code: 4459

Deposited By: [Esfeld, Michael](#)

Deposited On: 16 February 2009