

# Spacetime, Structural Realism, and the Substantival/Relational Debate: An Ontological Investigation from the Perspective of Structural Realism in the Philosophy of Mathematics

Slowik, Edward (2006) Spacetime, Structural Realism, and the Substantival/Relational Debate: An Ontological Investigation from the Perspective of Structural Realism in the Philosophy of Mathematics.

Full text available as:

[Microsoft Word](#) - Requires a viewer, such as [Microsoft Word Viewer](#)

## Abstract

This essay explores structural realist interpretation of spacetime with special emphasis on the close interrelationship between, on the one hand, ontological debates in spacetime structural realism and, on the other, foundational investigations in structural realism in the philosophy of mathematics. Drawing on various structuralist approaches in the philosophy of mathematics, as well as on the theoretical complexities of General Relativity, this investigation will reveal that a structuralist approach can serve as a useful means of deflating some of the ontological and metaphysical disputes regarding similarly structured substantivalist and relationist spacetimes. Our analysis only covers spacetime theories up to the standard models in General Relativity (GTR), with its extension to theories of quantum gravity left for future investigations. This presentation is based on Slowik (2005), and includes a more detailed discussion in section 2.3 (which came out a bit garbled in the earlier paper).

**Keywords:** spacetime, structural realism, substantivalism, relationism

**Subjects:** [Specific Sciences: Physics: Relativity Theory](#)

**ID Code:** 2873

**Deposited By:** [Slowik, Edward](#)

**Deposited On:** 10 August 2006

**Additional Information:** This paper outline formed the basis of a poster session presented at the Second International Conference on Spacetime Ontology (Montreal, June 2006).