

# Continuity and logical completeness: an application of sheaf theory and topoi

Awodey, Steve (2000) Continuity and logical completeness: an application of sheaf theory and topoi.

Full text available as:

[PDF](#) - Requires a viewer, such as [Adobe Acrobat Reader](#) or other PDF viewer.

[Postscript](#) - Requires a viewer, such as [GhostView - GSView](#)

## Abstract

The notion of a continuously variable quantity can be regarded as a generalization of that of a particular (constant) quantity, and the properties of such quantities are then akin to, and derived from, the properties of constants. For example, the continuous, real-valued functions on a topological space behave like the field of real numbers in many ways, but instead form a ring.

Topos theory permits one to apply this same idea to logic, and to consider continuously variable sets (sheaves). In this expository paper, such applications are explained to the non-specialist. Some recent results are mentioned, including a new completeness theorem for higher-order logic.

**Keywords:** topos, topoi, sheaf theory, sheaves, category theory, categorical logic, logical completeness, higher-order logic, type theory

**Subjects:** [Specific Sciences: Mathematics](#)

**ID Code:** 175

**Deposited By:** [Awodey, Steve](#)

**Deposited On:** 03 March 2001