Some logical properties of local maps of toposes

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This talk reports on some recent research on the Logic of Types and Computation at Carnegie Mellon University [1]. The general goal of this research program is to develop a logical framework for the theories of types and computability that includes the standard mathematical spaces alongside the many constructions and spaces known from type theory and domain theory. One purpose of this goal is to facilitate the study of computable operations and maps on data that is not necessarily computable, such as the space of all real numbers.

Part of this research has been devoted to the study of a certain configuration of realizability toposes, with special emphasis on a particular local map. In this talk, a set of axioms for local maps of toposes is proposed. They are shown to be sound and complete, in the sense that whenever a given topos satisfies them, it then gives rise to a local map and, moreover, any local map of toposes satisfies the axioms. Some concrete examples and applications are also considered.

References

[1] D.S. Scott et. al., *Logics of Types and Computation at Carnegie Mellon University*, http://www.cs.cmu.edu/Groups/LTC/.

*Joint work with Lars Birkedal and Dana S. Scott.