Achim D. Brucker **An Interactive Proof Environment for Object-oriented Specifications** . ETH Zurich,2007. ETH Dissertation No. 17097.

Abstract: We present a semantic framework for object-oriented specification languages. We develop this framework as a conservative shallow embedding in Isabelle/HOL. Using only conservative extensions guarantees by construction the consistency of our formalization. Moreover, we show how our framework can be used to build an interactive proof environment, called HOL-OCL , for object-oriented specifications in general and for UML/OCL in particular.

Our main contributions are an extensible encoding of object-oriented data structures in HOL, a datatype package for object-oriented specifications, and the development of several equational and tableaux calculi for object-oriented specifications. Further, we show that our formal framework can be the basis of a formal machine-checked semantics for OCL that is compliant to the OCL 2.0 standard.