Abstract

In this thesis we study completeness properties of infinitary propositional logics from the perspective of abstract algebraic logic. The goal is to understand how the basic tool in proofs of completeness, the so called Lindenbaum lemma, generalizes beyond finitary logics. To this end, we study few properties closely related to the Lindenbaum lemma (and hence to completeness properties). We will see that these properties give rise to a new hierarchy of infinitary propositional logic. We also study these properties in scenarios when a given logic has some (possibly very generally defined) connectives of implication, disjunction, and negation. Among others, we will see that presence of these connectives can ensure provability of the Lindenbaum lemma.

Keywords: abstract algebraic logic, infinitary logics, Lindenbaum lemma, disjunction, implication, negation