

# Abstract

This thesis studies the extensions of the four-valued Belnap–Dunn logic, called super-Belnap logics, from the point of view of abstract algebraic logic. We describe the global structure of the lattice of super-Belnap logics and show that this lattice can be fully described in terms of classes of finite graphs satisfying some closure conditions. We also introduce a theory of so-called explosive extensions and use it to prove new completeness theorems for super-Belnap logics. A Gentzen-style proof theory for these logics is then developed and used to establish interpolation for many of them. Finally, we also study the expansion of the Belnap–Dunn logic by the truth operator  $\Delta$ .

**Keywords:** abstract algebraic logic, Belnap–Dunn logic, paraconsistent logic, super-Belnap logics