

Abstract: The aim of this thesis is to prove the Baur–Monk Theorem and thereby show complete module-theories admit an elimination of quantifiers down to (Boolean combinations of) existential formulae.

To achieve this, following a brief introduction in Chapter 1, the reader is familiarised in Chapter 2 with the notion of a positive-primitive formula in the language of right \mathbf{R} -modules, and its close relationship with commutative groups, their cosets, and lattices.

Chapter 3 first lays the technical groundwork for the proof of the Baur–Monk Theorem, presented in Section 3.3, in its opening two subsections which contain the needed combinatorial and group-theoretical results, namely the Neumann Lemma and a variation on the Inclusion-Exclusion Principle.

Chapter 4 concludes the mathematical work contained herein with a brief overview of some immediate corollaries of the the Baur–Monk Theorem and earlier results.