

WESTFÄLISCHE WILHELMS-UNIVERSITÄT MÜNSTER

BACHELORARBEIT

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# Monads, Comonads and Witt Vectors

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## Preface

In this bachelor thesis, I will give an introduction to the concept of monads, which are a generalization of monoids, and their categorical duals, comonads. Every adjunction induces a monad, but every monad is induced by an adjunction as well. In the third and last section, will also introduce Witt vectors, which are used a lot in algebraic number theory and proof that they admit a comonad structure. At last, I will show that the teichmüller map induces a morphism of comonads between the free monoid ring comonad and the witt vector comonad.

# Contents