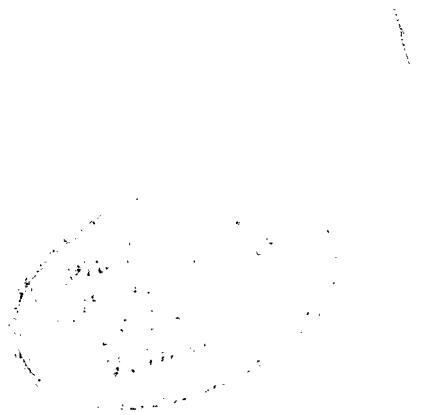


London Mathematical Society Lecture Note Series. 220

Algebraic Set Theory

A. Joyal
Université du Québec à Montréal

I. Moerdijk
Universiteit Utrecht



Contents

Preface	vii
Introduction	1
I Axiomatic Theory of Small Maps	7
§1 Axioms for small maps	7
§2 Representable structures	11
§3 Power-sets	16
§4 Complete sup-lattices	22
§5 Appendix: Uniqueness of universal small maps	24
II Zermelo-Fraenkel Algebras	29
§1 Free Zermelo-Fraenkel algebras	29
§2 Ordinal numbers	38
§3 Von Neumann ordinals	46
§4 The Tarski fixed point theorem	54
§5 Axioms for set theory	59
III Existence Theorems	67
§1 Open maps and (bi-)simulations	67
§2 Forests	71
§3 Height functions	74
§4 Construction of V and O	77
§5 Construction of Tarski ordinals	81
§6 Simulation for Von Neumann ordinals	83
IV Examples	87
§1 Sets and classes	87
§2 Kuratowski finite maps	88
§3 Sheaves on a site	89
§4 Realizability	92

§5 Choice maps	96
Appendix A. Monads and algebras with successor	101
Appendix B. Heyting pretopoi	109
Appendix C. Descent	113
Bibliography	117
Index	120