

Contents

Acknowledgments	vii
Chapter 1. Introduction	1
Chapter 2. Categories and partial semigroups	7
2.1. Preliminaries	7
2.2. Congruences	9
2.3. Useful lemmas	13
Chapter 3. Ideal extensions	17
3.1. Generation and separation properties	17
3.2. Lifiable congruences	19
3.3. Congruences on ideal extensions	20
Chapter 4. Chains of ideals	25
4.1. Congruences on chains of ideals	26
4.2. Partial rectangular bands	28
4.3. Short retractable chains	31
4.4. Short non-retractable chains	32
4.5. Visualisation conventions	37
Chapter 5. Transformation categories	39
5.1. Definitions and preliminaries on \mathcal{T}	39
5.2. Green's relations and multiplicative properties in \mathcal{T}	40
5.3. Congruences on ideals of \mathcal{T}	43
5.4. Planar and annular reducts of \mathcal{T}	46
5.5. Other categories of transformations	47
Chapter 6. Partition categories	49
6.1. Definitions and preliminaries on \mathcal{P}	49
6.2. Green's relations and multiplicative properties in \mathcal{P}	51
6.3. Congruences on ideals of \mathcal{P}	53
6.4. Planar and annular reducts of \mathcal{P}	57
6.5. Partial Brauer categories	61
Chapter 7. Brauer categories	63
7.1. Definitions and preliminaries on \mathcal{B}	63
7.2. Green's relations and multiplicative properties in \mathcal{B}	64
7.3. Congruences on ideals of \mathcal{B} : the odd case	66
7.4. Congruences on ideals of \mathcal{B} : the even case	68
7.5. Planar and annular reducts of \mathcal{B}	72

Chapter 8. Temperley–Lieb and anti-Temperley–Lieb categories	73
8.1. Multiplicative properties in \mathcal{TL} and \mathcal{TL}^\pm	73
8.2. Congruences on ideals of \mathcal{TL} and \mathcal{TL}^\pm : the odd case	75
8.3. Congruences on ideals of \mathcal{TL} : the even case	79
8.4. Congruences on ideals of \mathcal{TL}^\pm : the even case	80
Chapter 9. Jones and anti-Jones categories	83
9.1. Multiplicative properties in \mathcal{J} and \mathcal{J}^\pm	84
9.2. Congruences on ideals of \mathcal{J} and \mathcal{J}^\pm : the odd case	86
9.3. Congruences on ideals of \mathcal{J} and \mathcal{J}^\pm : the even case	89
Chapter 10. Categories and partial semigroups with \mathcal{H} -congruences	95
10.1. \mathcal{H} -congruences	95
10.2. More on chains of ideals	98
Chapter 11. Linear and projective linear categories	103
11.1. Definitions and preliminaries on \mathcal{L} and $P\mathcal{L}$	103
11.2. Green’s relations and multiplicative properties in \mathcal{L} and $P\mathcal{L}$	104
11.3. Congruences on ideals of \mathcal{L}	106
11.4. Visualising the lattices	109
11.5. Congruences on ideals of $P\mathcal{L}$	111
Chapter 12. Partial braid categories	115
12.1. Definitions and preliminaries on \mathcal{IB}	115
12.2. Green’s relations and multiplicative properties in \mathcal{IB}	117
12.3. Congruences on ideals of \mathcal{IB}	118
Bibliography	125