

## TABLE DES MATIÈRES

ÉTIENNE GHYS & CHRISTOPHER-LLOYD SIMON — <i>On the topology of a real analytic curve in the neighborhood of a singular point</i> .....	1
Statement of the main result .....	1
The genesis of this paper .....	2
1. Analytic chord diagrams: an algorithm .....	3
1.1. Polynomial interchanges: algorithmic description .....	4
1.2. Chord diagrams .....	5
1.3. A necessary condition .....	5
1.4. Proof of the fundamental lemma .....	8
1.5. More non-analytic diagrams .....	10
1.6. With a computer .....	12
1.7. Marked chord diagrams .....	13
1.8. Let us bound the number of chord diagrams .....	15
2. Analytic chord diagrams: interlace graphs .....	17
2.1. Polynomial interchanges: permutation graph .....	17
2.2. Collapsible graphs .....	19
2.3. Distance hereditary and treelike graphs .....	23
2.4. Some proofs .....	27
2.5. Appendix: completely decomposable graphs .....	29
References .....	32
ROMAIN DUJARDIN — <i>A closing lemma for polynomial automorphisms of <math>\mathbb{C}^2</math></i> .....	35
1. Introduction and results .....	35
Acknowledgments .....	37
2. Proofs .....	37
2.1. Preliminaries .....	37
2.2. The atomic case .....	38
2.3. The non-atomic case .....	39
References .....	42
CARLOS GUSTAVO T. DE A. MOREIRA — <i>On the minima of Markov and Lagrange Dynamical Spectra</i> .....	45

1. Introduction .....	45
Acknowledgements .....	47
2. Preliminaries from dynamical systems .....	47
3. Proofs .....	50
References .....	57
DMITRY DOLGOPYAT & OMRI SARIG — <i>Quenched and annealed temporal</i>	
<i>limit theorems for circle rotations</i> .....	59
1. Introduction .....	60
Setup .....	60
Methodology .....	60
Known results on spatial limit theorems: .....	61
Known results on temporal limit theorems: .....	61
This paper .....	62
Heuristic overview of the proof .....	62
Functions with more than one discontinuity .....	62
2. Statement of results .....	62
3. The main steps in the proofs of Theorems 2.1, 2.2 .....	65
Step 1: Identifying the resonant harmonics .....	66
Step 2: An identity for the sum of resonant terms .....	67
Step 3: Limit theorems for resonant harmonics .....	68
4. Proofs of the Key Steps. ....	70
4.1. Preliminaries. ....	70
4.2. Step 1 (Propositions 3.1 and 3.3) .....	72
4.3. Step 2 (Proposition 3.5) .....	78
4.4. Step 3 (Proposition 3.7) .....	80
Appendix A. Proof of Proposition 1.1 .....	82
Appendix B. Cauchy and Poisson .....	83
References .....	84
JOEL W. FISH & HELMUT HOFER — <i>Exhaustive Gromov compactness for</i>	
<i>pseudoholomorphic curves</i> .....	87
1. Introduction .....	87
Acknowledgements .....	90
2. Preliminaries .....	90
2.1. Direct limit manifolds .....	91
2.2. Riemann surfaces .....	93
2.3. Pseudoholomorphic curves .....	95
2.4. Convergence of pseudoholomorphic curves .....	97
3. Proof of exhaustive Gromov compactness .....	101
Appendix A. Formula for arithmetic genus .....	110
References .....	111

SEBASTIÃO FIRMO & PATRICE LE CALVEZ & JAVIER RIBÓN — <i>Fixed points of nilpotent actions on <math>\mathbb{R}^2</math></i> .....	113
1. Introduction .....	113
2. Proof of Theorem 3 .....	117
2.1. Definitions .....	117
2.1.1. Rotation number .....	117
2.1.2. Blowed up annuli .....	118
2.1.3. Linking function .....	121
2.2. Preliminary results .....	122
2.3. Proof of the theorem .....	123
3. Compactly covered Nielsen classes .....	125
3.1. Nielsen classes .....	125
3.2. Existence of classes with non-vanishing Lefschetz number .....	126
3.3. A minimality property .....	128
3.4. A particular case .....	130
4. Proof of Theorem 1 .....	134
5. Rotational properties of homeomorphisms of the plane .....	137
5.1. The function Link and Turn .....	137
5.2. Rotation numbers .....	138
6. Privileged isotopies for groups of plane homeomorphisms .....	141
6.1. Properties $(\mathbf{P2})'$ , $(\mathbf{Q})'$ , $(\mathbf{R})$ , $(\mathbf{S})$ .....	141
6.2. Main result .....	142
6.3. Property $(\mathbf{P2})$ for abelian groups .....	147
7. Rotational properties for groups of plane diffeomorphisms .....	148
7.1. Proof of Theorem 2 .....	148
7.2. Consequences of property $(\mathbf{R})_j$ .....	148
7.3. Proof of Proposition 46 in case $\text{supp}(\mu) \subset \text{Fix}(\phi)$ .....	149
7.4. Proof of Proposition 46 in case $\mu(\text{Fix}(\phi)) = 0$ .....	151
References .....	155
CHRISTIAN BONATTI & ALEX ESKIN & AMIE WILKINSON — <i>Projective cocycles over <math>SL(2, \mathbb{R})</math> actions: measures invariant under the upper triangular group</i> .....	157
1. Introduction .....	158
2. Applications and the irreducibility criterion .....	160
2.1. Linear representations of $G$ -lattices .....	161
2.1.1. The suspension construction and a criterion for simplicity ...	161
2.1.2. Foliated geodesic and horocyclic flows .....	162
2.2. The Kontsevich-Zorich cocycle .....	164
3. Construction of an invariant subspace .....	168
3.1. The forward and backward flags .....	168
3.2. The forward flag and the unstable horocycle flow: defining the inert flag. ....	170

3.3. The inert flag is $G$ -invariant .....	171
3.4. Relaxing the definition of the components of the inert flag .....	172
4. Proof of Theorem 1.3 .....	173
5. Proof of Theorem 2.8 .....	174
References .....	177
KRISTIAN BJERKLÖV & L. HÅKAN ELIASSON — <i>Positive fibered Lyapunov exponents for some quasi-periodically driven circle endomorphisms with critical points</i> .....	181
1. Introduction .....	181
1.1. One dimensional models .....	181
1.2. Skew-products .....	182
1.3. Our model .....	183
1.4. Statement of results .....	183
2. Building expansion for good $\omega$ .....	184
2.1. The functions $\varphi_k$ and the sets $A_k^s$ .....	184
2.2. Scales and some arithmetics .....	184
2.3. Good frequencies .....	185
2.4. Base case for the induction .....	185
2.5. Inductive step .....	186
2.6. Positive Lyapunov exponents for all good frequencies .....	188
3. Parameter exclusion .....	189
3.1. Dependence on $\omega$ . .....	189
3.2. Parameter exclusion .....	191
References .....	193
ALBERT FATHI — <i>Recurrence on infinite cyclic coverings</i> .....	195
1. Introduction .....	195
2. The displacement function .....	198
3. The Pageault barrier .....	202
4. The $\rho_+$ and $\rho_-$ functions .....	204
5. The fundamental proposition .....	206
6. The results .....	208
References .....	214
DENNIS SULLIVAN — <i>Lattice Hydrodynamics</i> .....	215
1. Overview .....	215
2. Introduction to the “momentum model” .....	217
3. The ideas of the construction and definitions .....	218
The lattice vector field $V_L$ .....	218
The face velocity vectors and face normal components $V_F, v_F$ .....	219
The model proposal .....	219
The derivative outside the nonlinear term .....	219

The nonlinear term as a lattice vector field .....	219
The nonlinear term as a one chain .....	219
4. Lattice Vector calculus .....	219
Volume preserving .....	219
Divergence operator .....	219
Gradient of a lattice scalar field .....	219
Laplacian of $f$ .....	220
Curl of a lattice vector field .....	220
5. Lattice topology, the Laplacian and the Hodge decomposition .....	220
6. The “potential term” and the “friction term” .....	221
References .....	222
VINCENT DELECROIX & ÉLISE GOUJARD & PETER ZOGRAF & ANTON ZORICH — <i>Contribution of one-cylinder square-tiled surfaces to Masur-Veech volumes</i> .....	223
Introduction .....	224
Siegel-Veech constants and Masur-Veech volumes .....	224
Equidistribution of square-tiled surfaces .....	224
Contribution of 1-cylinder square-tiled surfaces and large genus asymptotics of Masur-Veech volumes .....	225
Siegel-Veech constants and Masur-Veech volumes of strata of meromorphic quadratic differentials .....	226
Structure of the paper .....	227
Acknowledgements .....	227
1. Equidistribution .....	227
1.1. Strata of Abelian differentials .....	227
1.2. Strata of quadratic differentials .....	230
2. Contribution of 1-cylinder square-tiled surfaces to Masur-Veech volumes .....	232
2.1. Jenkins-Strebel differentials. Critical graphs (separatrix diagrams) .....	232
2.2. Contribution of 1-cylinder diagrams .....	234
2.3. Asymptotics in large genera .....	238
2.4. Application: experimental evaluation of the Masur-Veech volumes .....	241
2.5. Contribution of a single 1-cylinder separatrix diagram: computation .....	241
Choice of cyclic ordering .....	242
Abelian versus quadratic differentials .....	242
Contribution of each individual 1-cylinder separatrix diagram .....	243
2.6. Counting 1-cylinder diagrams for strata of Abelian differentials based on Frobenius formula and Zagier bounds .....	246
Frobenius formula .....	249
3. Alternative counting of 1-cylinder separatrix diagrams .....	252
3.1. Approach based on recursive relations .....	252

Strata of Abelian differentials .....	252
Strata of quadratic differentials .....	255
3.2. Approach based on Rauzy diagrams .....	259
3.3. The example of $\mathcal{Q}(1^3, -1^3)$ .....	261
Appendix A. Impact of the choice of the integer lattice on diagram-by-diagram counting of Masur-Veech volumes .....	263
Appendix B. (by Philip Engel) Square-tiled surfaces with one horizontal cylinder .....	267
References .....	272