

# Table of contents

## Chap. 1 Existence and main properties of $\mathbf{W}$

### 1.0 Introduction

### 1.1 Existence of $\mathbf{W}$ and first properties

1.1.1 A few more notations

1.1.2 A Feynman-Kac penalisation result

1.1.3 Definition of  $\mathbf{W}$

1.1.4 Study of the canonical process under  $W_\infty^{(\lambda\delta_0)}$

1.1.5 Some remarkable properties of  $\mathbf{W}$

1.1.6 Another approach to Theorem 1.1.6

1.1.7 Relation between  $\mathbf{W}$  and other penalisations (than the Feynman-Kac ones)

### 1.2 $W$ -Brownian martingales associated to $\mathbf{W}$

1.2.1 Definition of the martingales  $(M_t(F), t \geq 0)$

1.2.2 Examples of martingales  $(M_t(F), t \geq 0)$

1.2.3 A decomposition Theorem for positive Brownian supermartingales

1.2.4 A decomposition result for the martingale  $(M_t(F), t \geq 0)$

1.2.5 A penalisation Theorem, for functionals in class  $\mathcal{C}$

1.2.6 Some other results about the martingales  $(M_t(F), t \geq 0)$

### 1.3 Invariant measures related to $\mathbf{W}_x$ and $\mathbf{\Lambda}_x$

1.3.1 The process  $(\mathcal{X}_t, t \geq 0)$

1.3.2 The measure  $\mathbf{\Lambda}_x$

1.3.3 Invariant measures for the process  $((X_t, L_t^\bullet), t \geq 0)$

1.3.4 Invariant measures for the process  $(L_t^{X_t-\bullet}, t \geq 0)$

## Chap. 2 Existence and properties of $\mathbf{W}^{(2)}$

### 2.1 Existence of $\mathbf{W}^{(2)}$

2.1.1 Notation and Feynman-Kac penalisations in two dimensions

2.1.2 Existence of the measure  $\mathbf{W}^{(2)}$