

Contents

1	Introduction	1
2	Basic Concepts	3
2.1	Cauchy sequences	3
2.2	Banach spaces	3
2.3	Hilbert spaces	4
2.4	Dual spaces	5
2.5	Convergence and Compactness	5
3	Optimality Conditions	7
3.1	First and second-order necessary conditions	8
3.2	First and second-order sufficient conditions	9
3.3	Finite Dimensional Case $X = \mathbb{R}^n$ $Y = \mathbb{R}$	10
4	Local Convexification on Finite Dimensional Spaces	12
4.1	Local Convexity of the p -Power Lagrangian	13
5	Local Convexification on Hilbert Spaces	17
6	Examples	24
6.1	Example 1	24
6.2	Example 2	26
7	Conclusions	30

CONTENTS

ii

Bibliography

31