

Table of Contents

Abstract	iii
Acknowledgements	vi
Table of Contents	vii
1 Introduction	1
1.1 General introduction	1
1.1.1 Sets to Fuzzy sets	1
1.1.2 Fuzzy sets to fuzzy mathematics	2
1.1.3 Fuzzy metric and fuzzy norm	3
1.2 Background	4
1.2.1 Fuzzy normed linear spaces	4
1.2.2 Fuzzy metric spaces	5
1.3 Preliminaries	6
1.3.1 Fuzzy normed linear spaces	6
1.3.2 \mathcal{L} -fuzzy metric space	14
1.4 Organization of the thesis	18
2 Linear operators in fuzzy normed linear spaces	20
2.1 Introduction	20
2.2 Boundedness of linear operators in FNLSSs	20
2.2.1 Different notions of fuzzy boundedness and fuzzy continuity .	21
2.2.2 Main results	25

2.3	Space of strongly fuzzy bounded operators	32
2.4	Few results on linear operators	34
2.4.1	Extension of a linear operator	34
2.4.2	Inverse of a linear operator	37
3	Fuzzy compact operators in fuzzy normed linear space	41
3.1	Introduction	41
3.2	Fuzzy compact operators and fuzzy boundedness	43
3.3	Fuzzy compact operators and finite dimensional FNLSSs	47
3.3.1	Riesz's Lemma	47
3.3.2	Range of a fuzzy compact operator	51
3.4	Space of all fuzzy compact operators	52
4	Topology generated by fuzzy normed linear spaces	57
4.1	Introduction	57
4.2	Topology induced by a fuzzy norm	57
4.3	Schauder basis in an FNLSS	61
4.3.1	Summable family in FNLSSs	61
4.3.2	Schauder basis	63
4.4	Sequence spaces in FNLSSs	67
5	\mathcal{L}-fuzzy metric spaces	72
5.1	Introduction	72
5.2	Metrizability of \mathcal{L} -fuzzy metric	72
5.3	Compactness of \mathcal{L} -fuzzy metric	75
5.3.1	Precompact \mathcal{L} -FMS	76
5.3.2	\mathcal{LF} - strongly bounded set	79
5.4	Covering factor of an \mathcal{L} -fuzzy metric	81
Publications		90