

# Contents

<b>List of Figures</b>	<b>xv</b>
<b>List of Tables</b>	<b>xix</b>
<b>Abbreviations</b>	<b>xxi</b>
<b>Symbols</b>	<b>xxv</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Evolution of Wireless Standards . . . . .	2
1.2 Motivation for the Thesis . . . . .	5
1.3 Intelligent Reflecting Surfaces . . . . .	6
1.4 Fading Channel Models . . . . .	8
1.5 Diversity Techniques . . . . .	12
1.5.1 Diversity Combining Receiver . . . . .	13
1.6 Non-Orthogonal Multiple Access . . . . .	17
1.7 Ultra-Wideband . . . . .	19
1.8 Performance Measures and Evaluation . . . . .	21
1.9 Literature Review . . . . .	23
1.10 Research Objective . . . . .	25
1.11 Organization of Thesis . . . . .	26
<b>2 Multi-IRS-Assisted SISO System Over Rician Fading</b>	<b>31</b>
2.1 Introduction . . . . .	31
Contributions: . . . . .	33
2.2 System and Channel Models . . . . .	34
2.3 Outage Probability Analysis . . . . .	37
2.3.1 Approximate OP Expression . . . . .	38
2.3.1.1 CLT-Based Method . . . . .	38
2.3.1.2 LSE-Based Method . . . . .	39
2.3.2 Asymptotic OP Expression . . . . .	40
2.3.3 Diversity Order and Coding Gain . . . . .	41
2.4 Numerical and Simulation Results . . . . .	42

2.5	Summary . . . . .	47
<b>3</b>	<b>Multi-IRS-Assisted System With Switched Diversity</b>	<b>49</b>
3.1	Introduction . . . . .	49
	Contributions: . . . . .	52
3.2	System and Channel Models . . . . .	52
	3.2.1 Switching Operation for SSC Scheme . . . . .	55
	3.2.2 Switching Operation for SEC Scheme . . . . .	56
3.3	Outage Probability Analysis . . . . .	57
	3.3.1 Exact Outage Probability Expression for SSC Scheme . . . . .	58
	3.3.2 Exact Outage Probability Expression for SEC Scheme . . . . .	58
	3.3.3 Effect of Branch Unbalance on Exact Outage Probability of SSC Scheme . . . . .	59
	3.3.4 Approximate OP Expressions for SSC and SEC Schemes . . . . .	59
	3.3.5 Asymptotic OP Expression for SSC and SEC Schemes . . . . .	61
	3.3.6 Diversity Order and Coding Gain . . . . .	63
3.4	Numerical and Simulation Results . . . . .	64
3.5	Summary . . . . .	70
<b>4</b>	<b>Multiple-IRS Aided Wireless Networks Over Nakagami-<math>m</math> Fading Channels</b>	<b>71</b>
4.1	Introduction . . . . .	71
	4.1.1 Related Works . . . . .	72
	Contributions: . . . . .	75
4.2	System and Channel Models . . . . .	76
4.3	Analysis of Outage Probability . . . . .	79
	4.3.1 Approximate OP Expression . . . . .	79
	4.3.1.1 CLT Approach . . . . .	80
	4.3.1.2 LSE Approach . . . . .	80
	4.3.2 Asymptotic OP Expression . . . . .	81
	4.3.2.1 Non-Identical Fading Conditions . . . . .	82
	4.3.2.2 Identical Fading Conditions . . . . .	84
	4.3.3 Diversity Order Analysis . . . . .	86
4.4	Results and Discussion . . . . .	87
4.5	Summary . . . . .	90
<b>5</b>	<b>IRS-Assisted Downlink NOMA System</b>	<b>93</b>
5.1	Introduction . . . . .	93
	Contributions: . . . . .	94
5.2	System and Channel Models . . . . .	95
5.3	BER Analysis of Downlink NOMA . . . . .	98
	5.3.1 Accurate BER Expression for $N_u \gg 1$ . . . . .	99

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5.3.1.1	BER Expression for Far User $f$ . . . . .	99
5.3.1.2	BER Expression for Near User $n$ . . . . .	100
5.3.2	Asymptotic BER Expressions . . . . .	101
5.3.2.1	Asymptotic MGF for $\gamma_u$ . . . . .	101
5.3.2.2	Asymptotic BER Expression for Far User $f$ . . . . .	103
5.3.2.3	Asymptotic BER Expression for Near User $n$ . . . . .	103
5.3.3	Diversity Order Analysis . . . . .	104
5.4	Numerical and Simulation Results . . . . .	104
5.5	Conclusion . . . . .	108
<b>6</b>	<b>IRS-Assisted UWB System</b> . . . . .	<b>111</b>
6.1	Introduction . . . . .	111
	Contribution . . . . .	113
6.2	Proposed IRS-UWB System Model . . . . .	114
6.3	Reflection Optimization . . . . .	117
	6.3.1 Signal Detection . . . . .	119
6.4	Simulations and Discussion . . . . .	120
6.5	Summary . . . . .	126
<b>7</b>	<b>Conclusion and Future Scope</b> . . . . .	<b>129</b>
7.1	Conclusion . . . . .	129
7.2	Future Scope . . . . .	132
	<b>Appendix</b> . . . . .	<b>134</b>
	<b>A</b> . . . . .	<b>135</b>
	<b>B</b> . . . . .	<b>137</b>
	<b>C</b> . . . . .	<b>139</b>
	<b>References</b> . . . . .	<b>141</b>
	<b>Author's Publications</b> . . . . .	<b>153</b>



# List of Figures

1.1	Evolution of Wireless Standards . . . . .	4
1.2	RIS-assisted SISO system. . . . .	7
1.3	Block diagram of diversity receiver system. . . . .	14
1.4	SIC implemented at NU. . . . .	18
2.1	Multiple-IRS-aided SISO communication system with SC receiver. . .	34
2.2	OP performance with varying $N$ for $M = 2$ . The marker, solid and dashed lines denote the simulation, analytical (CLT), and analytical (LSE) results, respectively. . . . .	43
2.3	OP performance with varying both $M$ and $N_m$ . The marker, solid, and dashed lines denote the simulation, analytical (CLT), and analytical (LSE) results, respectively. . . . .	44
2.4	Asymptotic OP performance with varying both $N_m$ and $M$ . The solid lines and dashed lines denote the simulation and analytical results, respectively. . . . .	44
2.5	OP performance with varying $N$ for $M = 2$ . The dashed and dotted lines denote the analytical (LSE) and asymptotic results, respectively. . . . .	45
2.6	OP performance with varying $K$ . The solid lines and marker denote the analytical and simulation results, respectively. . . . .	45
2.7	OP performance with varying $M$ . The solid lines and marker denote the analytical and simulation results, respectively. . . . .	46
2.8	OP performance w.r.t $d_1$ for $M = 2$ and fixed $N_m = 64$ . The solid lines and marker denote the analytical and simulation results, respectively. . . . .	47
3.1	Multiple IRS-aided SISO communication system with switched diversity schemes. . . . .	55
3.2	OP performance w.r.t $P$ (dBm) for without diversity scheme ( $M = 1$ ), SSC scheme ( $M = 2$ ) and SEC scheme ( $M = 3, 4$ ). . . . .	65
3.3	OP performance w.r.t $P$ (dBm) for without diversity scheme ( $M = 1$ and switched diversity schemes ( $M = 2, 3, 4$ ). . . . .	66
3.4	Asymptotic OP performance with varying the number of IRS elements $N_m$ for SSC scheme. . . . .	67

3.5	Asymptotic OP performance with varying the number of IRS elements $N_m$ for SEC scheme. . . . .	67
3.6	OP performance with varying the fading parameter $K$ for SEC scheme. . . . .	68
3.7	OP performance with varying the number of IRS elements in the panels $N_m = 32, 64, 128$ and $M = 4$ for SEC scheme. . . . .	68
3.8	OP performance w.r.t threshold $\gamma_{th}$ of SSC ( $M = 2$ ) and SEC ( $M = 3, 4$ ) schemes at fixed $N_m = 64$ . . . . .	69
3.9	OP performance w.r.t distance $d_1$ of SEC for $M = 4$ and fixed $N_m = 64$ for SEC. . . . .	69
4.1	Multiple IRS-aided SISO wireless network with IRS panel selection. . . . .	77
4.2	OP performance with varying $N$ and a fixed $L = 2$ . . . . .	88
4.3	OP vs. $P$ with varying the fading parameter $m$ . . . . .	89
4.4	OP vs. $P$ with varying IRS Panels ( $L$ ) . . . . .	90
4.5	OP vs. $P$ with varying both $L$ and $N_l$ . . . . .	91
5.1	Two users IRS-assisted downlink power domain NOMA communication system. . . . .	96
5.2	BER w.r.t SNR performance of near and far users for fixed $N_m = 64$ . The solid lines and marker denote the analytical and simulation results, respectively. . . . .	106
5.3	BER performance w.r.t SNR (dB) with varying the fading parameter $K$ . The solid lines and marker denote the analytical and simulation results, respectively. . . . .	106
5.4	BER performance with varying the number of IRS elements in the panels $N_m = 32, 64, 128$ . The solid lines and marker denote the analytical and simulation results, respectively. . . . .	107
5.5	BER performance w.r.t. SNR (dB) with varying the near use power coefficient $\alpha$ . The solid lines and marker denote the analytical and simulation results, respectively. . . . .	108
5.6	BER performance of near user w.r.t distance $d_1$ with varying SNR. The solid lines and marker denote the analytical and simulation results, respectively. . . . .	109
5.7	BER performance of far user w.r.t distance $d_3$ (in meters) with varying SNR. The solid lines and marker denote the analytical and simulation results, respectively. . . . .	109
6.1	Proposed IUWB system model. Only 2 channel taps in all the three channels are depicted. . . . .	115
6.2	Normalized SNR plot by considering PPS, RPS, and strongest-path methods at the RIS panel for $N = 2$ . . . . .	117
6.3	Average BER of IUWB for $N = 16, 64, 128$ over IEEE 802.15.4a CM1 channel. . . . .	121
6.4	BER performance of IUWB and conventional UWB without IRS. . . . .	122
6.5	BER performance of IUWB based on IRS position. . . . .	122

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6.6	The sum-rate vs SNR performance of IUWB system over IEEE 802.15.4a CM1 channel. . . . .	123
6.7	Average BER of IUWB for $N=16$ over IEEE 802.15.4a CM1 channel. . . . .	124
6.8	Coverage probability versus SNR analysis of IUWB. . . . .	125
6.9	Average energy efficiency of IUWB system by varying number of reflecting elements.126	
6.10	Average ToA performance of IUWB. Solid and dashed lines denote the PPS and RPS performance, respectively. . . . .	127



# List of Tables

1.1	A summary of IRS related works . . . . .	24
1.2	A summary of NOMA related works . . . . .	25
4.1	A summary of related works . . . . .	75
5.1	Experimental values used for simulation and validation . . . . .	105



# Abbreviations

1G	First generation
2G	Second generation
3G	Third generation
4G	Fourth generation
5G	Fifth generation
6G	Sixth generation
ABER	Average bit error rate
AF	Amplify-and-forward
AI	Artificial intelligence
ASER	Average symbol error rate
AWGN	Additive white Gaussian noise
BF	Beam-forming
BER	Bit error rate
BPSK	Binary phase shift keying
BS	Base station
CDF	Cumulative distribution function
CDMA	Code division multiple access
CIR	Channel impulse response
CLT	Central limit theorem
CPS	Coherent phase shift
CSI	Channel state information
D2D	Device-to-device

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DF	Decode-and-forward
EGC	Equal gain combining
FCC	Federal Communications Commission
FDMA	Frequency division multiple access
FU	Far user
GHz	Gigahertz
GSM	Global System for Mobile communications
i.i.d.	Independent and identically distributed
i.n.i.d.	Independent and non-identically distributed
IRS	Intelligent reflecting surfaces
IoT	Internet of Things
ISI	Inter-symbol interference
IUWB	IRS-aided ultra-wideband
LoS	Line-of-sight
LSE	Laguerre series expansion
LTE	Long term evolution
MGF	Moment generating function
MIMO	Multiple-input multiple-output
MISO	Multiple-input single-output
ML	Maximum-likelihood
mmWave	Millimeter wave
MRC	Maximal ratio combining
MS	Mobile station
NLoS	Non-line-of-sight
NOMA	Non-orthogonal multiple access
NU	Near user
OMA	Orthogonal multiple access
OP	Outage probability
OTFS	Orthogonal time frequency space

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PDF	Probability density function
PLE	path loss exponent
PSK	Phase shift keying
QAM	Quadrature amplitude modulation
QPSK	Quadrature phase shift keying
Rx	Receiver
RF	Radio-frequency
RIS	Reflecting intelligent surfaces
RQAM	Rectangular quadrature amplitude modulation
RRS	Randomly reconfigurable surfaces
RV	Random variable
SC	Selection combining
SEC	Switch and examine combining
SER	Symbol error rate
SIC	Successive interference cancellation
SISO	Single-input single-output
SNR	Signal-to-noise ratio
SINR	Signal-to-interference plus noise ratio
SQAM	Square quadrature amplitude modulation
SSC	Switch and stay combining
Tx	Transmitter
TDMA	Time division multiple access
ToA	Time-of-arrival
UAV	Unmanned aerial vehicle
UE	User equipment
UMTS	Universal Mobile Telecommunications System
UWB	Ultra-wideband



# Symbols

$ \cdot $	Absolute value
${}_1F_1(\cdot, \cdot; \cdot)$	Confluent hypergeometric function
$F_X(\cdot)$	Cumulative distribution function of random variable $X$
$\mathbb{E}[\cdot]$	Expectation operator
$\exp(\cdot)$	Exponential
$\lfloor \cdot \rfloor$	Floor function
$\Gamma(\cdot)$	Gamma function
$Q(\cdot)$	Gaussian $Q$ -function
$\Im\{\cdot\}$	Imaginary part operator
$\mathcal{L}^{-1}[\cdot]$	Inverse Laplace transform operator
$\kappa - \mu$	Kappa-Mu fading channel
$\mathcal{L}[\cdot]$	Laplace transform operator
$\log_{10}(\cdot)$	Logarithm with base 10
$I_0(\cdot)$	Modified Bessel function of first kind and order zero
$I_\nu(\cdot)$	Modified Bessel function of first kind and order $\nu$
min	Minimum
$Q_\nu(\cdot, \cdot)$	Marcum $Q$ -function of order $\nu$
$\ln(\cdot)$	Natural log
$\ \cdot\ $	Norm
$\prod_{i=1}^n$	Product
$f_X(\cdot)$	Probability density function of random variable $X$

$\Pr[E]$	Probability of an event $E$
$\Re\{\cdot\}$	Real part operator
$\in$	Set membership
$\text{Var}[\cdot]$	Variance