

List of Tables

2.1	Comparison of Sampling Error with LHS and MC, Source: Analytica [1]	78
2.2	Voltage Stability Probability with Scale Factor of 8.6 m/s and $\cos\phi = 0.95$ (<i>lag</i>)	99
2.3	Voltage Stability Probability with Scale Factor of 8.6 m/s and $\cos\phi = 0.83$ (<i>lag</i>)	100
2.4	Voltage Stability Probability with Scale Factor of 8.6 m/s and $\cos\phi = 1$ (<i>unity</i>)	100
2.5	Voltage Stability Probability with Scale Factor of 6 m/s and $\cos\phi = 0.95$	100
2.6	Voltage Stability Probability with Scale Factor of 6 m/s and $\cos\phi = 0.83$	101
2.7	Voltage Stability Probability with Scale Factor of 6.0 m/s and $\cos\phi = 1$ (<i>unity</i>)	101
2.8	Voltage Stability Probability with Scale Factor of 7.3 m/s, Shape Factor of 2.0 and $\cos\phi = 0.95$	101
2.9	Voltage Stability Probability with Scale Factor of 7.3 m/s, Shape Factor of 2.0 and $\cos\phi = 0.83$ (<i>lag</i>)	102
2.10	Voltage Stability Probability with Scale Factor of 7.3 m/s, Shape Factor of 2.0 and $\cos\phi = 1$ (<i>unity</i>)	102
2.11	Voltage Stability Probability with $\cos\phi = 0.95$ (<i>lag</i>)	104
2.12	Voltage Stability Probability with $\cos\phi = 0.83$ (<i>lag</i>)	105
2.13	Voltage Stability Probability with $\cos\phi = 1.0$ (<i>unity</i>)	105
2.14	Voltage Magnitude Estimation with Wind Power at Bus-12	108
2.15	Error(%) in Voltage Magnitude Estimation with Wind Power at Bus-12	109
2.16	Voltage Magnitude Standard Deviation Estimation with Wind Power at Bus-12	110

2.17 Error(%) in Voltage Magnitude Standard Deviation Estimation with Wind Power at Bus-12	111
2.18 Voltage Angle Estimation with Wind Power at Bus-12	112
2.19 Error(%) in Voltage Angle Estimation with Wind Power at Bus-12	113
2.20 Voltage Angle Standard Deviation Estimation with Wind Power at Bus-12	114
2.21 Error(%) in Voltage Angle Standard Deviation Estimation with Wind Power at Bus-12	115
2.22 Voltage Magnitude Estimation with Wind Power at Bus-6	118
2.23 Error(%) in Voltage Magnitude Estimation with Wind Power at Bus-6	119
2.24 Voltage Magnitude Standard Deviation Estimation with Wind Power at Bus-6	120
2.25 Error(%) in Voltage Magnitude Standard Deviation Estimation with Wind Power at Bus-6	121
2.26 Voltage Angle Estimation with Wind Power at Bus-6	122
2.27 Error(%) in Voltage Angle Estimation with Wind Power at Bus-6	123
2.28 Voltage Angle Standard Deviation Estimation with Wind Power at Bus-6	124
2.29 Error(%) in Voltage Angle Standard Deviation Estimation with Wind Power at Bus-6	125
2.30 Voltage Magnitude Estimation with Wind Power at Bus-2	128
2.31 Error(%) in Voltage Magnitude Estimation with Wind Power at Bus-2	129
2.32 Voltage Magnitude Standard Deviation Estimation with Wind Power at Bus-2	130
2.33 Error(%) in Voltage Magnitude Standard Deviation Estimation with Wind Power at Bus-2	131
2.34 Voltage Angle Estimation with Wind Power at Bus-2	132
2.35 Error(%) in Voltage Angle Estimation with Wind Power at Bus-2	133
2.36 Voltage Angle Standard Deviation Estimation with Wind Power at Bus-2	134
2.37 Error(%) in Voltage Angle Standard Deviation Estimation with Wind Power at Bus-2	135
2.38 Summary of Estimation Error with Different Statistical Methods	137
2.39 Voltage Magnitude Estimation with Wind Power at Bus-2 with Three Parameters Variation	140

2.40 Voltage Magnitude Standard Deviation Estimation with Wind Power at Bus-2 with Three Parameters Variation	141
2.41 Voltage Angle Estimation with Wind Power at Bus-2 with Three Parameter Variation	142
2.42 Voltage Angle Standard Deviation Estimation with Wind Power at Bus-2 with Three Parameter Variation	143
2.43 Voltage Magnitude Estimation with Wind Power at Bus-12 with Three Parameter Variation	144
2.44 Voltage Magnitude Standard Deviation Estimation with Wind Power at Bus-12 with Three Parameter Variation	145
2.45 Voltage Angle Estimation with Wind Power at Bus-12 with Three Parameter Variation	146
2.46 Voltage Angle Standard Deviation Estimation with Wind Power at Bus-12 with Three Parameter Variation	147
2.47 Voltage Magnitude Standard Deviation at Bus-12 with Different Correlation of Wind Power	151
2.48 Weibull Parameter of Voltage Distribution at 3 Buses	153
2.49 Bus-4 Voltage PDF Estimation	154
2.50 Bus-14 Voltage PDF Estimation	156
2.51 Bus-31 Voltage PDF Estimation	158
 3.1 Network Parameter	177
3.2 Network Parameter	197
3.3 Participation Factor of Mode -3	200
3.4 Participation Factor of Mode 4 and 5	203
3.5 Participation Factor of Mode 1 and 2	204
3.6 Participation Factor of Mode 3, 4 and 5	205
3.7 Participation Factor of Mode 6	205
3.8 Participation Factor of Mode 7	206
3.9 Comparison of Modal Analysis with and without detuned reactor	215
3.10 C Type Filter Parameters	217
3.11 Comparison of Modal Analysis of Network with Detuned Reactor on 200 kVAr Capacitor and C Filter on Bus-5	221

3.12	High Frequency Filter Parameters	222
3.13	Comparison of Modal Analysis Network and Network with Detuned Reactor on 200 kVAr Capacitor and High Frequency Filter on Bus-5	227
3.14	Order of Critical Frequencies at Various Buses	227
3.15	Optimization of Different Filter Types	235
4.1	System Parameter	278
5.1	System Parameter	287
5.2	Eigenvalues of Simplified Network	287
5.3	Eigenvalue Sensitivity	288
5.4	State Variable with Associated Network Parameter	289
5.5	Comparison of State-Space and Analytical Method	289
5.6	Eigenvalues with LC Filter	295
5.7	Filter Parameter for Different Value of Parameter m	299
5.8	Eigenvalues with C-Type Filter	301
6.1	Paramerter Variation and Distribution	335
6.2	Paramerter Variation and Distribution	336
6.3	Statistical Analysis of Eigenvalue	337
6.4	Statistical Analysis of Eigenvalue	337
7.1	Fault Ride Through Characteristics	341