## List of Figures

1.1	Typical Solution of Riemann Problem	13
2.1	Wave curves in $\rho - u$ plane for $Z = 0.04, K_p = 0.3, \beta = 1.0$ and $\gamma = 1.4$	29
2.2	Wave curves in $\rho - u$ plane for $Z = 0.04, K_p = 0.3, \beta = 1.0$ and $\gamma = 1.4$	30
2.3	Density profiles for test 1 with varying $k_p$	33
2.4	Velocity profiles for test 1 with varying $k_p$	33
2.5	Density profiles for test 1 with varying $Z_0$	34
2.6	Velocity profiles for test 1 with varying $Z_0$	34
2.7	Density profiles for test 1 with varying $\beta$	34
2.8	Velocity profiles for test 1 with varying $\beta$	35
2.9	Density profiles for test 2	35
2.10	Velocity profiles for test 2	35
2.11	Density profiles for test 3	36
2.12	Velocity profiles for test 3	36
2.13	Density profiles for test 4	36
2.14	Velocity profiles for test 4	37
2.15	Collision of $S_2S_1$	41
2.16	Collision of $S_2R_1$	42
2.17	Collision of $S_2R_1$	42
2.18	Collision of $R_2S_1$	43
2.19	$S_2$ overtakes $S_2$	45
2.20	$R_1$ overtakes $S_1$	46
2.21	$S_2$ overtakes $R_2$	48
3.1	Profile of functions $f$ and $g$ for table—3.1	62
3.2	Profile of functions $f$ and $g$ for table table—3.2	62
3.3	Profile of functions $f$ and $g$ for table—3.3	63
3.4	Profile of functions $f$ and $g$ for table–3.4	63
3.5	Profile of functions $f$ and $g$ for table—3.5	64
3.6	Profile of functions $f$ and $g$ for table—3.6	64
3.7	Profile of functions $f$ and $g$ for different values of $k_p$	69
3.8	Profile of functions $f$ and $g$ for different values of $k_p$	69
3.9	Profile of functions $f$ and $g$ for different values of $\beta$	70

List of Figures xiv

3.10	Profile of functions $f$ and $g$ for different values of $\beta$	70
3.11	Profile of functions $f$ and $g$ for different values of $\Omega$ at $a^{(0)}/\vartheta_p = 2$ .	71
3.12	Profile of functions $f$ and $g$ for different values of $\Omega$ at $a^{(0)}/\vartheta_p=4$ .	71
4.1	Behavior of the radius of the Blast Wave for $m=2$ with varying $\Omega$	80
4.2	Behavior of the radius of the Blast Wave for $m=1$ with varying $\Omega$ .	80
4.3	Behavior of the radius of the Blast Wave for $m=0$ with varying $\Omega$ .	80
4.4	Behavior of the radius of the Blast Wave for $m=2$ with varying $K_p$ .	81
4.5	Behavior of the radius of the Blast Wave for $m=2$ with varying $\beta$	81
4.6	Pressure profiles for varying $K_p$ with $b = 0.02, \beta = 0.5$ and $\Omega = 100$ .	82
4.7	Pressure profiles for varying $\beta$ with $b=0.02, K_p=0.1$ and $\Omega=100$ .	82
4.8	Pressure profiles for varying $\Omega$ with $b=0.02, K_p=0.1$ and $\beta=0.5$ .	83
4.9	Pressure profiles for varying b with $\Omega = 100, K_p = 0.1$ and $\beta = 0.5$	83
4.10	Velocity profiles for varying $K_p$ with $\Omega = 100, b = 0.02$ and $\beta = 0.5$ .	83
4.11	Velocity profiles for varying $\beta$ with $\Omega = 100, K_p = 0.1$ and $b = 0.02$ .	84
4.12	Velocity profiles for varying b with $\Omega = 100, K_p = 0.1$ and $\beta = 0.5$	84
4.13	Velocity profiles for varying $\Omega$ with $b=0.02, K_p=0.1$ and $\beta=0.5$ .	84
4.14	Density profiles for varying $\Omega$ with $b = 0.02, K_p = 0.1$ and $\beta = 0.5$	85
4.15	Density profiles for varying $K_p$ with $b = 0.02, \Omega = 0.1$ and $\beta = 0.5$	85
4.16	Density profiles for varying $\beta$ with $b = 0.02, K_p = 0.1$ and $\Omega = 100$ .	85
4.17	Density profiles for varying b with $\Omega = 100, K_p = 0.1$ and $\beta = 0.5$	86
4.18	Behavior of energy carried by the blast wave for $m=2$ with varying $\Omega$	87
4.19	Behavior of energy carried by the blast wave for $m=2$ with varying	
	$K_p$	87
5.1	Behavior of radius of weak shock wave for $j = 0$	95
5.2	Behavior of radius of weak shock wave for $j=1,\ldots,\ldots$	96
5.3	Behavior of radius of weak shock wave for $j = 2, \ldots, \ldots$	96
5.4	Density profile of weak shock wave for $j = 2, \ldots, \ldots$	97
5.5	Velocity profile of weak shock wave for $j=2,\ldots,\ldots$	97
5.6	Pressure profile of weak shock wave for $j = 2, \ldots, 2$	98
5.7	Behavior of Energy of weak shock Wave for $j = 0, \dots, \dots$	99
5.8	Behavior of Energy of weak shock Wave for $j = 1, \ldots, \ldots$	99
5.9	Behavior of Energy of weak shock Wave for $j = 2, \dots, \dots$	99