

List of Tables

3.1	Timings of the FWT. $D = 20$, $N = 2^J$, $J = 10, 11, \dots, 19$, $\lambda = J$	80
3.2	Timings of the PWT. $D = 20$, $N = 2^J$, $J = 19$, and $\lambda = J$	82
3.3	Timings of the MFWT. $D = 20$, $N = 2^J$, $\lambda_N = J = 10$, and $M = 16, 32, \dots, 2048$	83
3.4	Timings of the 2D FWT (FWT2). $D = 20$, $N = 2^J$, $\lambda_N = J = 10$, and $M = 16, 32, \dots, 1024$	86
3.5	Standard data layout results in poor load balancing. Here $P = 2$, $N = 16$, and $\lambda = 3$	88
3.6	Standard data layout results in poor load balancing. Here $P = 2$, $N = 16$, and $\lambda = 3$	88
4.1	Regularity of Scaling functions and Wavelets.	103
4.2	The relative error shows the different values of J and D.	118
4.3	The relative error shows the different values of J and D.	127
5.1	Residual error of wavelet method and finite difference method	186
5.2	Computational time for wavelet method and finite difference method	186
6.1	Comparison of Condition Number without and with preconditioning.	192

6.2 Comparison of Condition Number without and with preconditioning for the mentioned problem	193
8.1 Meaning of flag	224
9.1 Dirichlet BVP in 1D	251
9.2 Neumann BVP in 1D	251
9.3 Mixed BVP in 1D	252
9.4 Dirichlet BVP in 2D with all points as neighbor	252
9.5 Dirichlet BVP in 2D with only surrounding points as neighbor	253
9.6 Neumann BVP in 2D with all points as neighbor	253
9.7 Neumann BVP in 2D with only surrounding points as neighbor	254
9.8 Helmholtz BVP in 2D with all points as neighbor	254
9.9 Helmholtz BVP in 2D with only surrounding points as neighbor	255
9.10 Poisson Dirichlet Problem in 2D with neighboring points around the central particle according to Algorithm-1	255
9.11 Poisson Dirichlet Problem in 2D with neighboring points around the central particle according to Algorithm-2	256
9.12 Poisson Dirichlet Problem in 2D with neighboring points around the central particle according to Algorithm-3	256
10.1 The relative error at different time steps.	265