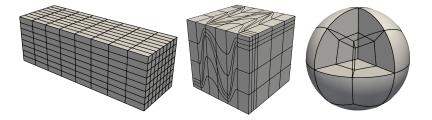
Cache-optimized and low-overhead implementations of multigrid smoothers for high-order FEM computations

December 11, 2022

This document is the companion material to:

It contains raw data of the multigrid section, in which the Poisson equations is solved on three families of meshes (anisotropic Cartesian mesh, Kershaw mesh, 3D ball):



with the statistics:

	poly	nomial degr	ree $p=4$	poly	nomial degr	ee p = 7
name	level L	no. cells	no. DoFs	level L	no. cells	no. DoFs
anisotropic	7	262,144	16,974,593	6	32,768	11,390,625
Kershaw	5	$110,\!592$	7,189,057	4	13824	4,826,809
3D ball	5	131,072	8,438,273	4	16384	5,657,793

We identify the best solver configuration by varying:

- 1. the Chebyshev degree k,
- 2. the type of decreasing p,
- 3. point Jacobi or ASM (cell-centric patches with n = 1 and n = 2, vertex-star patches) as preconditioner for the Chebyshev iteration,
- 4. first or fourth kind of Chebyshev polynomials,
- 5. one-sided vs. two-sided V-cycles

- 6. different polynomial degrees p, and
- 7. different anisotropy settings.

The meaning of the coloring is as follows:

text	fastest configuration
text	fastest configuration in the current row
	within 20% of the fastest configuration
	within 50% of the fastest configuration
	within 100% of the fastest configuration
	all other configurations

1 Anisotropic mesh

Table 1: Anisotropic mesh $(x_2/x_0 = 1, p = 4)$

					bisect				-				±0	go-to-one					_				decrease	decrease-by-one			
	k = 1	_	k = 2	_	k = 3	k = 4	4	k = 5	_	k = 1	_	k = 2	_	k = 3	_	k = 4	_	k = 5	k	k = 1	i y	k = 2	k=	k = 3	k = 4	-	k = 5
	#i t[s]	1#1	t[s]	#	(s)	i#	t[s] #	#i t[s]	! #!	i t[s]	_	#i t[s]	i#	[s]	1#	[s] <i>4</i>	#	t[s]	1#1	t[s]	;#	[s]	<i>i#</i>	t[s]	1#1	t[s]	#i t[s]
cg-diagonal-1st kind-two sided	8 3.12e-1	p-1 7	3.52e-1	5	3.10e-1	4 2	2.94e-1	9 2.56e-	e-1 16	5.60e-1	p-1	9 4.03e-	1 6	3.29e-1	2	3.24e-1	5	3.73e-1	9	2.85e-1	9	3.77e-1	5	3.92e-1	4 3.	3.77e-1	3 3.31e-1
cg-diagonal-4th_kind-two_sided	9 3.49e-1	P-1 2	2.52e-1	4	2.49e-1	3 2.	.22e-1	3 2.56e-	P-1 19	6.65e-1	1-9	11 4.90e-	.1 8	4.37e-1	9	3.89e-1	10	3.73e-1	7	3.32e-1	7	2.53e-1	es	2.37e-1	3 2.	2.83e-1	3 3.29e-1
cg-fdm symm 1 f-1st kind-two sided	5 2.37e-1	9-1 7	4.76e-1	10	4.48e-1	4 4	1.43e-1	3 3.96e-	P-1 7	2.95e-1	6-1	7 4.17e-	-1	3.88e-	4	3.84e-1	4	4.54e-1	*	2.34e-1	7	3.04e-1	10	5.73e-1	4 5.	71e-1	3 5.15e-1
cg-fdm_symm_1_f-4th_kind-two_sided	6 2.83e-1	p-1 4	2.75e-i	4	3.59e-1	8	3.34e-1	3 3.96e-	P-1 9	3.77e-1	e-1	5 2.98e-1	.1 4	3.11e-]	4	3.82e-1	8	3.41e-1	10	2.92e-1	4	3.47e-1	4	4.60e-1	3 4.	4.32e-1	3 5.15e-1
cg-fdm.symm.2 f-1st_kind-two_sided	5 3.62e-i	9 J-2	7.06e-1	10	8.18e-1	3 6	3.31e-1	3 7.69e-	P-1 7	4.41e-1	1-9	6 6.07e-1	-1 2	7.00e-	4	7.16e-1	4	8.70e-1	2	4.64e-1	9	3.30e-1	20	1.09e+0	3 8.	43e-1	3 1.03e+(
cg-fdm symm 2 f-4th kind-two sided	6 4.33e-1	p-1 4	4.72e-1	4	6.56e-1	3 6	6.31e-1	3 7.68e-1	P-1 8	5.02	e-1	4 4.06e-	-1 4	5.60e-	4	7.17e-1	8	6.54e-1	9	5.57e-1	e	1.67e-1	e	6.54e-1	3 8.	8.43e-1	3 1.03e+(
cg-fdm.symm.v.f-1st_kind-two.sided	5 3.11e-1	P-1 7	6.65e-1	20	6.44e-1	4 6	3.48e-1	3 5.87e-1	B-1 6	3.42e-1	e-1	7 6:07e-1	-1 2	5.85e-	4	5.89e-1	4	7.10e-1	*	3.10e-1	7	8.50e-1	10	8.31e-1	4 8.	8.43e-1	3 7.66e-1
cg-fdm symm v f-4th kind-two sided	5 3.13e-i	e-1 4	3.83e-1	4	5.18e-1	3 4	1.89e-1	3 5.90e-1	9-1 7	3.98e-1	6-1	4 3.50e-1	1 4	4.70e-1	3	4.46e-1	8	5.35e-1	r0	3.87e-1	4	4.87e-1	es	5.01e-1	3 6.	6.34e-1	3 7.66e-1
gmres-fdm post 1 f-1st kind-two sided	4 2.24e-	e-1 7	5.45e-1	10	5.25e-1	4 5	5.38e-1	3 5.11e-1	9-1 7	3.39e-1		8 5.46e-1	-1 2	4.54e-	4	4.62e-1	4	5.51e-1	4	2.78e-1	7	6.86e-1	4	5.56e-1	4 6.	6.94e-1	3 6.63e-1
gmres-fdm post 1 f-1st kind-one sided	11 6.10e-1	8 8	6.21e-1	9	6.18e-1	5 6	6.51e-1	4 6.42e-1	P-1 16	1.96e-1	j	8 5.48e-1	9 1	5.37e-1	20	5.62e-1	4	5.51e-1	=	7.37e-1	7	6.85e-1	r0	6.70e-1	5 8.	8.37e-1	4 8.33e-1
gmres-fdm_post_l f-4th_kind-two_sided	5 2.75e-i	e-1 4	3.28e-1	4	4.32e-1	3	1.26e-1	3 5.10e-1	8-1-8	3.89e-1	-1-0	4 2.86e-1	.1 4	3.74e-1	4	4.62e-1	2	4.37e-1	10	3.38e-1	es	3.30e-1	es	4.42e-1	3	5.53e-1	3 6.65e-1
gmres-fdm_post_l_f-4th_kind-one_sided	8 4.33e-	e-1 6	4.71e-1	9	6.17e-1	5 6	6.49e-1	5 7.73e-1	9-1 B	4.42e-1	6-1	7 4.80e-1	9 1	5.37e-1	9	6.59e-1	9	7.82e-1	7	4.63e-1	9	5.95e-1	ro	6.71e-1	5 8.	8.38e-1	5 1.01e+(
gmres-fdm post 2 f-1st kind-two sided	6 4.85e-1	9-1-9	1.16e+0	7 0	1.27e+0	5 1.	.21e+0	4 1.23e + 0	9 0+	4.22e-i	e-1 1	1.11e+C	40 4	1.09e+0	0	1.03e+0	4	1.04e+0	9	6.25e-1	œ	.36e+0	7	0+969°1	5 1.0	1.63e+0	4 1.66e+C
gmres-fdm post 2 f-1st kind-one sided	13 1.06e+0	6 0+	1.17e+0	8 0	1.45e+0	6 1.	.43e+0	5 1.49e + 0	6 0+	6.34e-1	e-1 1	10 1.12e+C	8 0+	1.24e+0	9 0	1.22e+0	2	1.26e+0	Ξ	1.12e+0	6	.53e+0	· «	1.92e+0	6 1.9	0+916-1	5 1.99e+C
gmres-fdm post 2 f-4th kind-two sided	5 4.12e-1	9-1 4	5.61e-1	4	7.87e-1	4 1.	.01e+0	3 9.83e-1	P-1 5	8.57	.57e-1 4	4 4.82e-1	4 4	6.68e-1	4	8.60e-1	4	1.04e+0	20	5.29e-1	4	7.39e-1	4	1.04e+0	4 1.5	1.35e+0	3 1.32e+C
gmres-fdm post 2 f-4th kind-one sided	8 6.41e-1	2 1-0	9.22e-1	7	1.28e+0	7 1.	.64e+0	7 2:00e+0	2 0+0	4.92e-i	e-I	7 7.94e-1	1 7	1.09e+0	7 0	1.40e+0	7	1.70e+0	7	7.22e-1	7	.21e+0	7	1.70e+0	7 2.	2.19e+0	7 2.68e+C
gmres-fdm post v f-1st kind-two sided	6 4.27	e-1 8	8.58e-1	9	8.86e-1	5 9	9.52e-1	1 9.54e-1	P-1 7	4.54e-1	e-1	8 7.84e-1	.1 6	8.06e-	10	8.65e-1	4	8.65e-1	20	4.48e-1	œ	09e+0	9	1.14e+0	5 1.3	1.23e+0	4 1.24e+(
gnres-fdm post v f-1st kind-one sided	12 8.65e-1	p-1 9	9.68e-1	7	1.02e+0	6 1.	.12e+0 [5 1.15e+0	8 0+i	5.23e-1	[I	9 8.86e-	.1 7	9.33e-	10	8.68e-1	10	1.05e+0	12	1.05e+0	œ	09e+0	7	1.31e+0	5 1.3	.24e+0	5 1.50e+(
gnres-fdm post v f-4th kind-two sided	5 3.61e-1	p-1 4	4.61e-1	4	6.25e-1	3 6	3.29e-1	3 7.61e-1	p-1 5	3.31e-1	e-1	4 4.20e-1	.1 4	5.69e-	4	7.17e-1	~	6.90e-1	20	4.50e-1	4	5.84e-1	4	8.06e-1	3 8.	.17e-1	3 9.
gmres-fdm post v f-4th kind-one sided	7 4.99e-1	7 7	7.61e-1	9	8.88e-1	6 1.	12e+0 (3 1.35e	.35e+0 6	3.95e-	[]	7 6.96e-	1 6	8.12e-	9	1.02e+0	9 (1.23e+0	7	6.14e-1	9	8.37e-1	9	1.14e+0	6 1.	1.45e+0	5 1.50e+

Table 2: Anisotropic mesh $(x_2/x_0 = 2, p = 4)$

				Р	bisect				_					go-to-one					_				decrea	decrease-by-one	_			
_	k = 1	_	k = 2	~	k = 3	k = 4	4	k = 5	_	k = 1	_	k = 2	_	k = 3	_	k = 4	_	k = 5	_	k = 1	_	k = 2	_	k = 3	~	k = 4	_	k = 5
	#i t[s]	1#	t[s]	i#	t[s]	<i>i#</i>	t[s]	#i t	t[8]	1 2#	t[s]	#: 1	¢[s] #	#i t[s]	!#!	<i>i</i> : <i>t</i> [s]	! #:	i t[s]	i#	t[s]	#	t[s]	i#	t[s]	·#	t[s]	<i>i#</i>	[s]
cg-diagonal-1st_kind-two_sided	14 5.45e-1	7 7	3.53e-1	9	3.71e-1	5 3.	3.67e-1	4 3.4	3.41e-1	28 9.8	9.82e-1	16 7.1	.16e-1 1	11 6.01e-1	14	5.82e-1	e-1 8	5.94e-	-1 12	5.65e-1	7	4.38e-1	20	3.92e-1	4	3.77e-1	8	3.29e-1
cg-diagonal-4th kind-two_sided	17 6.58e-1	9	4.52e-1	9	3.72e-1	5 3.	3.68e-1	4 3.4	3.41e-1	34 1.1	19e+0	19 8.5	_	13 7.09e-1		10 6.46e-1	e-1 8	5.98e-	-1 14	6.61e-1	8	4.99e-1	10	3.92e-1	4	3.77e-1	8	3.30e-1
cg-fdm_symm_1_f-1st_kind-two_sided	7 3.29e	7	4.77e-1	10	4.48e-1	4 4.	1.44e-1	3 3.5	3.97e-1	13 5.	5.43e-1	8 4.7	.76e-1	5 3.88e-1	1-6	5 4.78e-1	e-1 4	4.55e-1	-1 2	4.07e-1	7	6.04e-1	20	5.75e-1	4	5.74e-1	e	5.16e-1
cg-fdm.symm_1_f-4th_kind-two_sided	9 4.23e-1	-1	3.42e-1	4	3.59e-1	3 3.	1.35e-1	3 3.5	3.98e-1	15 6.	.25e-1	8 4.7	.76e-1	6 4.64e-1	1-6	1 3.82e-1	e-1 4	4.54e-1	.1 8	4.65e-1	20	4.33e-1	4	4.61e-1	e	4.32e-1	e	5.16e-1
cg-fdm_symm_2_f-1st_kind-two_sided	7 5.04e-	1	8.22e-1	20	8.20e-1	4 8.	8.41e-1	3 7.6	.68e-1	.9 01	.25e-1	7 7.0	.07e-1	6 8.38e-1	1-6	1 7.16e-1	e-1 4	8.70e-1	-1 4	6.48e-1	9	9.30e-1	20	1.09e+0	4	1.12e+0	e	1.03e+0
cg-fdm.symm.2_f-4th_kind-two_sided	9 6.46e-	7	4.75e-1	4	6.56e-1	4 8.	8.41e-1	3 7.6	.69e-1	12 7.	.50e-1	9.9	.07e-1	5 6.99e-1	1-6	1 7.16e-1	e-1 4	8.70e-1	.1 8	7.41e-1	1 4	6.23e-1	4	8.73e-1	e	8.44e-1	e	1.03e+0
cg-fdm_symm_v_f-1st_kind-two_sided	5 3.12e-	71	6.70e-1	20	6.46e-1	4 6.	6.52e-1	4 7.8	.85e-1	9 5.	.12e-1	8 6.5	.95e-1	5 5.87e-1	1-6	5 7.38e-1	e-1 4	7.15e-1	-1	3.88e-1	7	8.47e-1	20	8.29e-1	4	8.44e-1	e	7.66e-1
cg-fdm_symm_v_f-4th_kind-two_sided	7 4.36e-1	7.1	3.85e-1	4	5.20e-1	4 6.	6.50e-1	3 5.9	5.90e-1	10 5.4	.68e-1	6 5.2	.22e-1	4 4.71e-l	1-6	1 5.91e-1	e-1 4	7.12e-1	.1 6	4.63e-1	4	4.88e-1	4	6.66e-1	e	$6.33e{-1}$	e	7.66e-1
gmres-fdm_post_1_f-1st_kind-two_sided	7 3.79e-	8 7-	6.20e-1	20	5.24e-1	4 5.	5.37e-1	4 6.4	3.42e-1	11 5.	.51e-1	8 5.4	.45e-1 (6 5.37e-1	170	5.60e-1	e-1 4	5.52e-1	.1 6	4.00e-1	7	6.86e-1	20	6.73e-1	4	6.96e - 1	e	6.67e-1
gmres-fdm_post_1 f-1st_kind-one_sided	13 7.36e-1	-1 0	7.01e-1	9	6.19e-1	5 6.	6.53e-1	5 7.7	7.78e-1	13 6.h	.68e-1	9 6	. I8e-I	7 6.22e-1	P-1	6.63e-1	e-1 5	. 6.69e-1	-1 12	8.11e-1	8	7.80e-1	9	7.91e-1	10	$8.39e{-1}$	4	8.34e-1
gmres-fdm post 1 f-4th kind-two sided	9 4.91e-1	-T	3.29e-1	4	4.34e-1	3 4.	1.28e-1	3 5.1	5.12e-1	14 7.	.29e-1	8 5.4	.46e-1	5 4.55e-1	1-9	4.64e-1	e-1 4	5.52e-1	.1 8	5.29e-1	1 4	4.16e-1	3	4.42e-1	e	5.54e-1	e	6.66e-1
gmres-fdm post 1 f-4th kind-one sided	10 5.50e-	-1 2	5.46e-1	9	6.19e-1	. 9	7.67e-1	6 9.1	9.13e-1	14 7.	.28e-1	8 5.4	.49e-1	7 6.24e-1	P-1	3 6.64e-1	e-1 6	7.88e-1	-1 8	5.96e-1	-	6.87e-1	9	7.91e-1	9	9.85e-1	9	1.18e + 0
gmres-fdm post 2 f-1st kind-two sided	7 5.60e-	10 10	1.29e+0	7	1.28e+0	5 1.	.22e+0	5 1.4	.49e+0	7 4.	91e-1	10 1.1	.11e+0 ,	7 1.09e+0	0±	3 1.210	1.21e+0 5	1.26e+(r0 4	7.20e-1	10	1.69e + 0	2 0	1.70e + 0	rO	1.63e + 0	r.c	2.00e+0
gmres-fdm_post_2_f-1st_kind-one_sided	15 1.24e+0	+0	1.43e+0	6	1.62e+0	6 1.	1.43e+0	6 1.7	.74e+0	10 7.	.07e-1	11 1.2	.24e+0	8 1.24e+0	0+	3 1.22	22e+0 5	1.26e+0	+0 13	1.34e+0	0 11	1.86e + 0	8 0	1.92e + 0	9	1.91e+0	9	2.34e+0
gmres-fdm post 2 f-4th kind-two sided	8 6.40e-	-1	6.78e-1	4	7.85e-1	4 1.1	.01e+0	4 1.2	1.23e+0	.9 6	.32e-1	5 5.8	. 82e-1	4 6.69e-1	1-6	1 8.57e-1	e-1 4	1.05e+(8 0+	8.18e-1	2	8.95e-1	4	1.05e+0	4	1.35e+0	4	1.66e + 0
gmres-fdm post 2 f-4th kind-one sided	9 7.21e-1	 8	1.05e+0	∞	1.45e+0	7 1.	.65e+0	8 2.2	2.25e+0	9 6	.34e-1	9.6	.01e-1	7 1.10e+0	0+	7 1.400	1.40e+0 8	1.93e+0	6 0+	9.18e-1	7	1.21e+(2 0	1.70e+0	-	2.19e + 0	œ	3.03e+0
gmres-fdm post v f-1st kind-two sided	6 4.29e-	6 J-4	9.65e-1	9	8.89e-1	5 9.	0.54e-1	4 9.5	0.56e-1	7 4.	.56e-1	8.8	.82e-1 (6 8.08e-1	1-6	5 8.68e-1	e-1 4	8.66e-1	-1	4.49e-1	1	1.22e+0	9 0	1.14e+0	10	1.24e+0	4	1.24e+0
gmres-fdm_post_v_f-1st_kind-one_sided	13 9.48e-1	10	1.08e + 0	∞	1.16e+0	6 1.	.12e+0	5 1.1	.15e+0	9 5.	.91e-1	11 1.0	.09e+0	8 1.06e+0	0+	3 1.02	.02e+0 5	1.05e+C	ь0 13	1.15e+0	0 10	1.35e+C	2 0	1.31e+0	9	1.45e+0	ro.	1.50e+0
gmres-fdm_post_v_f-4th_kind-two_sided	6 4.27e-1	* J*	4.58e-1	4	6.26e-1	4 7	7.89e-1	4 9.5	9.54e-1	8 5.	.19e-1	5 5.0	5.09e-1	4 5.69e-1	P-1	1 7.17e-1	e-1 4	8.66e-1	-1	4.49e-1	1	5.87e-1	4	8.08e-1	4	1.03e+0	4	1.24e+0
gmres-fdm_post_v_f-4th_kind-one_sided	8 5.68e-1	7 7	7.62e-1	7	1.03e+0	7 1.	.29e+0	7 1.5	.55e+0	8 5.	24e-1	8 7.5	.92e-1	7 9.346-1	7	7 1.178	.17e+0 7	1.41e+C	7 0-1	6.14e-1	7	9.64e-1	4	1.316±0	4	1.666±0	r	9.01e±0

Table 3: Anisotropic mesh $(x_2/x_0 = 5, p = 4)$

_				þį	isect				_				go	go-to-one				_				de	decrease-by-one	one			
_	k = 1	_	k = 2	-4	-3	k = 4	_	k = 5	_	k = 1	_	k = 2	_	k = 3	-24	k = 4	k = 5	201	k = 1	_	k = 2	_	k = 3	_	k = 4	_	k = 5
	#i t[s]	i#	t[s]	;#	t[s]	[s] # [s]	i# [s	t [s]	1#	t[s]	;#	[s] <i>t</i>	i#	t[s]	1#	t[s]	<i>i#</i>	t[s]	1#1	t[s] ±	#i t	t[s] #i	<i>i t</i> [s]	<i>i#</i>	[s] <i>t</i>	·#	t[s]
cg-diagonal-1st_kind-two_sided	34 1.31e+0	18	8.96e-1	13	7.99e-1	. 11 8.01e-	le-1 9	7.60e-	99 1	2.30e+0	0 35	1.55e+0	97	1.41e+0	22	1.41e+0	19 1	.40e+0	29 1.3	.36e+0	15 9.34e-1	le-1 1	1 8.56e-	-1 8	8.40e-1	8	8.72e-1
cg-diagonal-4th_kind-two_sided	39 1.50e+0	22	1.10e+0	91	9.81e-1	12 8.75e-1	e-1 16	8.44e-	1 78	2.72e+0	0 46	2.04e+0	32	1.73e+0	22	1.60e+0	20 1	.48e+0	33 1.1	.55e+0 1	1.18	1.18e+0 1	4 1.09e+0	+0 10	9.34e-1	∞	8.73e-1
cg-fdm_symm_1_f-1st_kind-two_sided	16 7.45e-1	œ	5.43e-1	9	5.36e-1	5 5.5	le-1 4	5.27e-	30	1.24e+	0 16	9.45e-1	12	9.24e-1	10	9.48e-1	8	9.02e-1	15 8.	8.64e-1	8 6.87e-1	re-1	5.73e-1	-1 4	5.71e-1	7	6.84e - 1
cg-fdm.symm.1.f-4th.kind-two.sided	19 8.84e-1	=	7.44e-1		6.23e-1	6 6.61e-1	le-1 5	6.57e-1	1 36	1.49e+0	0 21	1.24e+0	14	1.08e+0	Ξ	1.04e+0	9 1	.01e+0	17 9	9.82e-1	10 8.59e-1)e-1	6.87e-1	-1	7.13e-1	4	6.85e - 1
cg-fdm.symm_2_f-1st_kind-two_sided	15 1.07e+6	∞	9.43e-1	9	9.83e-1	4 8.4	8.416-1 4	1.02e+0	-0 21	1.31e+	0 11	1.11e+0	00	1.12e+0	-1	1.25e+0	6 1	.31e+0	14 1.	.29e+0	8 1.2	1.24e+0	1.09e+0	+0 4	1.12e+0	4	1.38e+0
cg-fdm.symm.2 f-4th kind-two sided	18 1.29e+0	10	1.18e+0	7	1.15e+0	5 1.05	.05e+0 4	1.02e+0	-0 25	1.55e+0	0 15	1.51e+0	10	1.39e+0	œ	1.43e+0	6 1	.30e+0	17 1.	57e+0	9 1.3	.39e+0 (1.31e+0	10	1.40e+0	4	1.37e+0
cg-fdm.symm.v.f-1st_kind-two_sided	13 8.03e-1	80	7.62e-1	9	7.75e-1	5 8.13e-1	k-1 2	9.79e-1	1 20	1.13e+0	0 11	9.54e-1	œ	9.37e-1	-1	1.03e+0	6 1	0+e90	11 8	8.45e-1	8 9.6	9.69e-1 (. 9.96e-1	-1	1.05e+0	20	1.27e+0
cg-fdm.symm.v.f-4th.kind-two.sided	16 9.86e-1	6	8.57e-1	9	7.74e-1	5 8.12e-1	3e-1 2	9.78e-1	1 24	1.35e+0	0 14	1.21e+0	10	1.17e+0	7	1.03e+0	6 1	.07e+0	13 9	9.96e-1	7 8.49e-1)e-1	[-96e-1	-1	1.05e+0	20	1.27e+0
gmres-fdm post 1 f-1st kind-two sided	15 8.73e-1	œ	6.22e-1	9	6.19e-1	. 6.51e-	le-1 4	6.44e-1	1 28	1.46e + 0	0 15	1.07e+0	=	9.73e-1	6	9.70e-1	8 1	.05e+0	14 9	3.63e-1	8 7.8	7.80e-1	6.73e-	-1 4	6.96e-1	4	8.34e-1
gmres-fdm post 1 f-1st kind-one sided	19 1.09e+0	10	7.79e-1	œ	8.09e-1	9.7 9	7.65e-1 6	9.10e-1	1 29	1.52e+0	0 18	1.30e+0	12	1.07e+0	10	1.08e+0	8 1	.05e+0	15 1.0	04e+0	9 8.76e-1	je-1	9.10e-1	-1 6	9.87e-1	10	1.01e+0
gmres-fdm_post_l_f-4th_kind-two_sided	19 1.10e+0	10	7.79e-1	7	7.13e-1	5 6.50e-1	le-1 4	6.41e-	1 34	1.78e + 0	0 20	1.42e+0	13	1.16e+0	10	1.08e+0	8 1	.02e+0	18 1.	.26e+0	9 8.75e-1	je-1	7.91e-1	-1 4	6.96e-1	4	8.35e-1
gmres-fdm post 1 f-4th kind-one sided	19 1.09e+0	10	7.80e-1	œ	8.11e-1	7 8.81e-1	le-1 6	9.11e-1	1 32	1.70e+0	0 19	1.36e+0	=	9.84e-1	6	9.71e-1	7	9.05e-1	18 1.	.26e+0	9 8.75e-1	je-1	-9.08e-	-1 6	9.83e-1	9	1.18e+0
gmres-fdm post 2 f-1st kind-two sided	13 1.06e+0	01	1.29e+0	7	1.28e+0	6 1.43	1.43e+0 5	1.49e+0	0 15	1.10e+0	0 11	1.23e+0	∞	1.24e+0	9	1.21e+0	5 1	26e+0	13 1.	.33e+0	10 1.69	0+a69"	7 1.70e+0	9 0+	1.91e+0	20	1.99e+0
gmres-fdm post 2 f-1st kind-one sided	21 1.73e+0	=	1.43e+0	6	1.62e+0	7 1.64	.64e+0 6	1.74e+0	0 18	1.33e+	0 12	1.35e+0	6	1.39e+0	7	1.39e+0	6 1	.48e+0	15 1.	26e+0 1	11 1.80	3 0+998.	2.14e+0	40 4	2.19e+0	9	2.34e+0
gmres-fdm post 2 f-4th kind-two sided	17 1.44e+0	6	1.16e+0	9	1.11e+0	5 1.22	.22e+0 4	1.23e+0	-0 19	1.39e+	0 10	1.11e+0	7	1.09e+0	5	1.03e+0	5 1	.26e+0	15 1.	.55e+0	8 1.30	.36e+0 (1.48e+0	22	1.63e + 0	4	1.66e + 0
gnres-fdm post 2 f-4th kind-one sided	18 1.51e+0	6	1.17e+0	∞	1.45e+0	8 1.85	.85e+0 8	2.26e + 0	0 19	1.39e+	0 10	1.12e+6	∞	1.24e+0	œ	1.58e+0	8 1	.92e+0	15 1.	26e+0	9 1.5	.53e+0 8	1.92e+0	8 9	2.47e+0	œ	3.02e+0
gmres-fdm post v f-1st kind-two sided	12 8.62e-1	10	1.07e+0	7	1.02e+0	6 1.12	.12e+0 5	1.15e+0	0 18	1.24e+(0 11	1.08e+0	∞	1.05e+0	7	1.17e+0	6 1	22e+0	10 8	8.72e-1	10 1.3	.35e+0	7 1.32e+0	9 0+	1.45e+0	20	1.50e+0
gmres-fdm post v f-1st kind-one sided	14 1.03e+t	112	1.29e+0	6	1.29e+0	7 1.29	.29e+0 7	1.55e+0	-0 19	1.30e+	0 12	1.19e+0	6	1.18e + 0	∞	1.33e+0	7	.41e+0	14 1.	.24e+0]	11 1.4	.49e+0	1.49e+0	4	1.67e + 0	7	2.02e+0
gmres-fdm post v f-4th kind-two sided	14 1.02e+0	∞	8.61e-1	9	8.91e-1	6 1.12	12e+0 5	1.15e+0	-0 21	1.41e+0	0 11	1.08e+0	80	1.05e+0	9	1.02e+0	5 1	.04e+0	12 1.	05e+0	9.6	1.00e-1	1.14e+0	10	1.24e+0	10	1.50e+0
gmres-fdm_post_v_f-4th_kind-one_sided	14 1.03e+0	6	9.67e-1	6	1.29e+0	8 1.46	.46e+0 9	1.96e + 0	-0 19	1.30e+0	0 10	9.87e-1	6	1.19e+0	6	1.48e+0	1 6	.78e+0	12 1.	0+e90	9 1.22	.22e+0 8	1,49e+0	8 0+	1.88e+0	∞	2.27e+0

Table 4: Anisotropic mesh $(x_2/x_0 = 10, p = 4)$

					bisect				-					go-to-one									decreas	decrease-by-one				
_	k = 1	_	k = 2	_	k = 3	k = 4	- 4	k = 5	_	k = 1		k = 2	_	k = 3	_	k = 4	_	k = 5	_	k = 1	_	k = 2	~	k = 3	k = 4	4	# *	k = 5
	#i t[s]	i# [s]	<i>i t</i> [s]	i#	t[s]	1#1	t[s]	#i t	t[s] #	#i t	t[s] ±	#i t[s]	1 # 1	i t[s]	# i	[s]	i#	t[s]	1#1	[s]	*	t[s]	,# <u> </u>	t[s]	1#	t[s]	<i>i#</i>	[s]
cg-diagonal-1st kind-two sided	64 2.47	2.47e+0 35	5 1.74e+0	_	1.60e+0	22 1.	0+a09	19 1.62	.62e+0 13	126 4.39	.39e+0 (69 3.05e+0	e+0 52	2.81e+0	_	2.74e+0		2.79e+0	53	2.47e+0	_	1.80e + 0	21	1.63e+0	18 1	0+a89°	15 1	.63e+0
cg-diagonal-4th_kind-two_sided	75 2.88	2.88e+0 44	4 2.18e+0	0 31	1.90e + 0	24 1	.74e+0	20 1.68	8e+0 1	153 5.32	9+0	86 3.81e+0	_	3.30e+	-0 48	3.07e+0		2.87e+0	0 62	2.90e+0	36	2.23e+0	22	1.94e + 0	20 1	0+998'l	16 1	.74e+0
cg-fdm_symm_1_f-1st_kind-two_sided	30 1.39	1.39e+0 17	7 1.15e+0	0 12	1.07e+0	10 1.	.10e+0	8 1.02	5e+0	58 2.39	5.39e+0	32 1.884	e+0 24	1.84e+0	_	1.79e+(_	1.91e+(22	1.43e+0	14	1.20e + 0	10	1.14e+0	9 1	.28e+0	7	19e+0
cg-fdm_symm_1_f-4th_kind-two_sided	36 1.67	1.67e+0 20	0 - 1.35e + 0	0 15	1.33e+0	=	.21e+0	9 1.18	8e+0 (69 2.8	:85e+0 4	40 2.35c	.35e+0 29	3 2.22e+0	-0 22	2.07e+0	+0 18	2.02e+0	30	1.73e+6	17	1.46e + 0	12	1.37e+0	10 1	1.42e+0	7	1.19e+0
cg-fdm_symm_2_f-1st_kind-two_sided	26 1.86	1.86e+0 14	4 1.64e+(01 0	1.63e+0	8	0+e29	7 1.80	3e+0	39 2.45	.42e+0 ;	22 2.22k	e+0 16	3 2.23e+0	-0 13	2.32e+(+0 12	2.60e+0	22	2.02e+0	12	1.86e + 0	6	1.96e + 0	7 1	0+96°	6 2	0+990"
cg-fdm_symm_2_f-4th_kind-two_sided	30 2.14	2.14e+0 18	8 2.12e+0		2.12e+0	2	5.09e+0	7 1.75	9e+0 4	47 2.93	:.93e+0 ;	27 2.724	72e+0 19	3.65e+0	-0 14	2.49e+0	+0 12	2.60e+0	27	2.49e + 0	15	2.32e + 0	10	2.17e+0	8 2	2.25e+0	6 2	0+990°
cg-fdm_symm_v_f-1st_kind-two_sided	25 - 1.54	1.54e+0 L4	4 1.33e+0	_	1.42e+0	9 1	.46e+0	8 1.57	.57e+0 3	39 2.20	2.20e+0	22 1.90k	3+0 13	7 1.98e+0	-0 14	2.06e+C	+0 12	2.13e+0	21	1.61e+0	12	1.45e + 0	10	1.66e + 0	8 1	0+989°	8	.04e+0
cg-fdm_symm_v_f-4th_kind-two_sided	30 1.85	1.85e+0 18	8 1.71e+0	0 13	1.54e+0	10 1	.62e+0	8 1.56	.56e+0 4	16 2.5	:59e+0 ;	27 2.34	.34e+0 20	2.33e+0	-0 15	2.21e+0	+0 12	2.13e+0	24	1.84e + 0	12	1.82e + 0	2	1.66e + 0	9 1	.89e+0	8	5.04e+0
gmres-fdm_post_1_f-1st_kind-two_sided	27 - 1.54	1.54e+0 15	5 1.20e+(_	1.11e+0	9 1	.12e+0	8 1.19	.19e+0 5	55 2.86	.86e+0	29 2.05k	05e+0 22	2 1.97e+0	-0 19	2.09e+C	+0	1.91e+(23	1.57e+0	12	1.18e + 0	6	1.16e + 0	7 1	14e+0	6 1	18e+0
gmres-fdm_post_1_f-1st_kind-one_sided	29 1.67	67e+0 12	5 1.21e+0	0 12	1.22e+0	10	.24e+0	9 1.33	.33e+0 5	57 2.97	.97e+0	29 2.074	.07e+0 23	3 2.06e+0	-0 19	2.10e+C	+0 17	2.25e+(22	1.70e+0	13	1.28e + 0	10	1.28e+0	8 1	28e+0	8	1.53e+0
gmres-fdm post 1 f-4th kind-two sided	34 1.96	1.96e+0 20	0 - 1.60e + (_	1.32e+0	10 1	24e+0	8 1.1.	0+96	68 3.55	55e+0	36 2.55	2.55e+0 26	3 2.32e+(-0 21	2.29e+(+0 17	2.25e+(27	1.85e+0	12	1.49e + 0	Ξ	1.41e+0	8 1	.28e+0	7	1.36e+0
gmres-fdm post 1 f-4th kind-one sided	31 1.82	1.82e+0 18	8 1.47e+(0 12	1.22e+0	9 1	.12e+0	7 1.0	5e+0 (64 3.36	36e+0	32 2.324	.32e+0 22	1.98e+(-0 18	2.01e+(+0 13	1.66e+0	22	1.71e+0	14	1.38e + 0	10	1.28e+0	8 1	1.28e+0	7	1.35e+0
gmres-fdm_post_2_f-1st_kind-two_sided	22 1.80	1.80e+0 I.8	2 1.55e+	6 0	1.62e + 0	7 1	64e+0	6 1.74	.74e+0 2	29 2.10	2.10e+0 2	21 2.384	.38e+0 12	2 1.83e+(6 0	1.76e→	-0 -0	1.91e+(22	2.27e+0	12	2.02e + 0	œ	1.91e+0	7 2	5.19e+0	5 2	5.00e+0
gmres-fdm_post_2_f-1st_kind-one_sided	26 2.15	.13e+0 IS	\$ 1.69e+	0 10	1.79e + 0	9 2	0+e90°	7 2.00	2.00e+0 2	29 2.11	.11e+0 5	20 2.29e+0	e+0 12	2 1.84e+(0 10	1.95е-	-0 -0	1.92e+0	24	2.47e+0	13	2.19e + 0	10	2.37e+0	8 2	2.47e+0	7 2	0+989°
gnres-fdm post 2 f-4th kind-two sided	25 2.04	:04e+0 13	3 1.68e+0	6 0	1.62e+0	8 1	.85e+0	6 1.74	.74e+0 3	33 2.45	42e+0	19 2.17a	.17e+0 13	3 1.98e+(0.	1.94e+	-0 -0	1.92e+(22	2.57e+0	13	2.18e + 0	6	2.14e+0	7 2	2.18e+0	6 2	.33e+0
gmres-fdm post 2 f-4th kind-one sided	26 2.15	2.13e+0 IS	3 1.69e+(0 10	1.79e + 0	8	85e+0	8 2.20	2.26e+0 3	31 2.31	.31e+0	18 2.094	e+0 12	2 1.84e+0	6 0	1.76e+C	-0 -0	1.92e+0	22	2.58e + 0	13	2.19e + 0	6	2.14e+0	8 2	2.57e+0	8 4	1.85e+0
gmres-fdm_post_v_f-1st_kind-two_sided	23 1.68	1.68e+0 L3	3 1.42e+0	0 10	1.45e+0	9 1	.64e+0	8 1.77	2e+0	31 2.1	.15e+0	20 2.00k	e+0 12	2 1.57e+0	0 10	1.63e-	6 0+	1.77e+0	19	1.71e+0	11	1.48e + 0	6	1.66e + 0	8 1	88e+0	7 2	.01e+0
gmres-fdm_post_v_f-1st_kind-one_sided	24 1.73	1.75e+0 14	4 1.52e+0	_	1.73e+0	1 2	.80e+0	9 1.90	6e+0 3	32 2.25	.22e+0	20 2.02k	*+0 14	1.84e+0	0.	1.80e + 0	10	1.97e+0	25	1.96e + 0	13	1.76e + 0	=	2.01e+0	10 2	5.32e+0	8	5.28e+0
gmres-fdm post v f-4th kind-two sided	27 1.95	1.97e+0 15	5 1.63e+0	0 11	1.57e+0	9 1	.63e+0	8 1.7.	75e+0 3	37 2.5(5.50e+0 2	22 2.19k	19e+0 15	5 1.97e+0	0.	1.79e + 0	6 OH	1.77e+0	25	1.95e+0	12	1.62e + 0	2	1.83e + 0	8 1	.88e+0	7 2	.01e+0
gnres-fdm post v f-4th kind-one sided	22	1.82e+0 1.	4 1.52e+0	0 11	1.59e+0	10 1	.80e+0	9 1.94	.96e+0 3	35 2.39	2.39e+0 2	20 2.02	:02e+0 13	3 1.71e+C	0	1,80e+C	+0 10	1.97e+0	22	1.95e+0	13	1.76e+0	=	2.01e+0	10 2	.32e+0	9 2	.54e+0

Table 5: Anisotropic mesh $(x_2/x_0 = 20, p = 4)$

_					bisect									go-tk	go-to-one								ф	decrease-by-one	one			
	k = 1	_	k = 1 $k = 2$	_	k = 3	_	k = 4	<i>y</i>	k = 5	4	k = 1	¥.	= 2	Ψ:	= 3	= <i>y</i>	= 4	<i>k</i> =		k = 1	_	k = 2	_	k = 3	_	k = 4	_	k = 5
-41	#i $t[s]$		[s] #i	<i>i#</i>	[s] <i>q</i>	1#	i $t[s]$	i#	[s] a	1#1	[s]	2#	[s]	i#i	t[s]	1#	[s]	<i>i#</i>	t[s] ±	#i t[s	# [s]	#: 1	t [8] 1 ±	#i $t[s]$	1#	t[s]	1#	t[s]
12,	3 4.74	4.74e+0 69	69 3.43e+0	+0 51	3.12e+0	_	3.05e+0	98	3.04e+0	239	8.33e+0	132	5.87e+0	3 26	5.26e+0	81 5.	5.18e+0	70 5.	15e+0 1	100 4.70	.70e+0 5	55 3.4	3.41e+0 4	41 3.18e + 0	+0 34	3.16e + 0	_	3.14e+
140	6 5.61e+0	1e+0 8	84 4.17e+0	09 0+	3.67e+0	+0 45	3.26e+0	32	2.93e+0	284	9.89e+0	162	7.17e+0	114 6	3.17e+0	88 5.	5.62e+0	73	38e+0 1	117 5.47	5.47e+0 6	65 4.0	4.03e+0	45 3.48e + 0	+0 36	3.35e+0	0 31	3.37e+
56	3 2.61	2.61e+0 3	32 2.16e+0	+0 84	2.13e	+0 20	2.19e+0	17	2.22e+0	107	4.42e+0	29	3.47e+0	46 3	3.53e+0	37 3.	3.51e+0	88 93	71e+0	45 2.59	.59e+0 2	26 2.23e-	9	20 2.29e+(+0 16	2.28e+0	0 14	2.39e+
67	7 3.12	3.12e+0 3	38 2.56e+0	+0 27	2.40e+0	18 0+	1 2.31e+0	81	2.36e+0	127	5.26e+0	73	4.30e+0	53 4	1.06e+0	41 3.	0+988°	34 3.5	82e+0	54 3.13	.13e+0 3	32 2.7	2.74e+0 2	22 2.51e+(+0 18	2.56e + 0	0 15	2.56e+
46	3.30	3.30e+0 8	25 2.94e	+0 19	3.10e-	+0 15	3.14e+0	14	3.58e+0	7.2	4.47e+0	40	4.02e+0	30	1.18e+0	25 4.	.45e+0	22 4.	78e+0	38 3.51	.51e+0 2	21 3.2	3.25e+0 1	16 3.48e+0	+0 13	3.64e+0	0 11	3.77e+
54	1 3.87	3.87e+0 3	30 3.52e+6	+0 22	3.59e+0	+0 18	3 3.78e+0	15	3.83e+0	85	5.29e+0	48	4.83e+0	35	1.88e+0	27 4.	0+a08	22 4.	76e+0	14 4.05	.05e+0 2	26 4.0	1.02e+0	4.13e+0	+0 15	4.21e+0	0 11	3.78e+
45	5 2.77	2.77e+0 2	27 2.57e+0	+0 30	2.57e+0	+0 18	3 2.91e+0	12	2.93e+0	73	4.12e+0	43	3.71e+0	32	3.73e+0	26 3.	.81e+0	23 4.0	08e+0	39 2.98	8+0 3	22 2.6	2.66e+0 1	17 2.81e+0	+0 14	2.95e+0	0 12	3.06e+
55		3.38e+0 3	32 3.03e+0	+0 23	2.97e+0	+0 19	3.08e+0	91	3.14e+0	88	4.96e+0	20	4.31e+0	37 4	1.31e+0	29 4.	1.25e+0	23 4.0	0+e90	45 3.44	3.44e+0 2	26 3.1	3.14e+0	19 3.15e+C	+0 14	2.94e+	0 12	3.06e+
52	2.99	2.99e+0 2	29 2.32e+0	+0 22	2.25e+0	+0 19	9 2.41e+0	15	2.21e+0	120	6.34e+0	26	3.97e+0	41 3	3.68e+0	33	3.64e+0	29 3.0	0+e90	41 - 2.82	.82e+0 2	24 2.3	2.37e+0	18 2.39e+C	+0 18	2.06e+0	0 11	2.08e+
gnres-fdm post 1 f-1st kind-one sided 55		3.16e+0 2	28 2.24e+(+0 23	2.35e+0	+0 19	9 2.41e+0	15	2.21e+0	119	6.25e+0	55	3.90e+0	41 3	3.70e+0	33	3.64e+0	29	71e+0 4	42 2.89	2.89e+0 2	23 2.2	2.26e+0	18 2.37e+0	+0 14	2.22e+0	0 12	2.26e+
gmres-fdm post 1 f-4th kind-two sided 65	5 3.77	3.77e+0 3	35 2.82e+(+0 25	2.55e+0	+0 20	2.53e+0	15	2.21e+0	149	7.87e+0	71	5.05e+0	48 4	1.36e+0	36 3,	.93e+0	29	0+e90	49 3.40	3.40e+0 2	27 2.6	2.66e+0 2	20 2.61e+C	+0 15	2.38e+0	0 12	2.27e+0
gmres-fdm post 1 f-4th kind-one sided 59	3.41	3.41e+0 3	31 2.54e+0		2.25e+0	+0 17	7 2.20e+0	13	1.91e+0	134	7.06e+0	09	4.29e+0	40	3.59e+0	30 3,	3.27e+0	25 3.	19e+0	45 3.12	.12e+0 2	25 2.4	2.46e+0 1	18 2.38e+C	+0 13	2.06e+0	01 0	1.89e+
gmres-fdm post 2 f-1st kind-two sided 31	1 2.62	2.62e+0 2	21 2.75e+(+0 13	2.32e+0	01 0+) 2.29e+0	6	2.52e+0	22	3.99e+0	31	3.58e+0	23	3.53e+0	19 3,	3.77e+0	14 3.	28e+0 2	29 3.00	3.00e+0 2	20 3.4	3.43e+0	12 2.82e+0	+0 10	3.04e+0	8 0	3.02e+
gmres-fdm post 2 f-1st kind-one sided 39	3.21	3.21e+0 2	21 2.77e+0	+0 14	2.50e+0	+0 11	1 2.51e+0	10	2.78e+0	26	4.08e+0	30	3.41e+0	23	3.57e+0	19 3,	3.78e+0	15 3.3	52e+0 3	32 3.38	3.38e+0 2	20 3.4	3.44e+0	13 3:05e+0	+0	3.33e+0	6 0	3.37e+(
gmres-fdm_post_2 f-4th_kind-two_sided 38	3.13	3.13e+0 2	21 2.75e+C	+0 14	2.50e+0	+0 11	1 2.51e+0	6	2.52e+0	. 64	4.67e+0	34	3.87e+0	25 3	3.84e+0	20 3.	.95e+0	15 3.	51e+0 3	34 3,55	3.55e+0 2	20 3.4	3.42e+0]	13 3:05e+0	+0 10	3.04e+0	8 0	3.03e+
38	3.14	3.14e+0 2	20 2.65e+0	+0 13	2.33e+0	+0 10	2.30e+0	8	2.26e+0	09	4.41e+0	30	3.41e+0	22 3	3.40e+0	18 3,	0+e09.8	13 3.0	.05e+0	33 3.47	.47e+0 1	19 3.2	3.28e+0	12 2.82e+0	+0 10	3.04e+0	8 0	3.04e+
gmres-fdm post v.f-1st kind-two sided 39	3.85	2.85e+0 2	24 2.60e+0	+0 18	2.66e + 0	+0 1/8	3 2.32e+0	112	2.58e+0	22	3.88e+0	31	3.16e+0	24 3	3.15e+0	20 3.	.31e+0	17 3.	45e+0 3	32 2.90	:90e+0 2	2.8	.87e+0	14 2.55e+0	+0 12	2.76e+0	0	3.07e+(
gnres-fdm post v f-1st kind-one sided 41	1 3.01	3.01e+0 2	24 2.61e+0	+0 18	2.67e + 0	+0 14	\$ 2.51e+0	12	2.59e+0	09	4.13e+0	32	3.28e+0	25	3.30e+0	20 3	.33e+0	18 3.0	65e+0 3	35 3.13	.13e+0 2	21 2.8	5.88e+0	15 2.75e+0	+0 13	2.99e + 0	0 12	3.34e+
gnres-fdm post v f-4th kind-two sided 49	3.63	3.63e+0 2	28 3.04e+C	+0 20	2.92e + 0	+0 15	5 2.70e+0	12	8.59e+0	7.1	4.83e+0	33	3.88e+0	27 3	3.55e+0	22 3.	.62e+0	18 3.	62e+0 3	39 3.46	.46e+0 2	23 3.1	4e+0	15 2.74e+0	+0 12	2.77e+0	= 0	3.06e+
gnres-fdm post v f-4th kind-one sided 45	5 3.33	3.33e+0 25	25 2.72e+0	+0 18	2.66e + 0	+0 14	\$ 2.51e+0	12	2.58e+0	69	4.73e+0	34	3.44e+0	24 3	3.17e+0	19 3.	.18e+0	14 2.	2.74e+0	37 3.30	3.30e+0 2	2.8	5.89e+0	15 2.75e+0	+0 13	3.00e+0	= 0	3.08e+C

Table 6: Anisotropic mesh $(x_2/x_0 = 50, p = 4)$

	_				bi	bisect									go-to-one	one				-				Ф	decrease-by-one	v-one				
	4	k = 1 $k = 2$	k	= 2	k	= 3	<i>y</i>	k = 4	k =	22	k =	= 1	k	= 2	k = 3	3	k = 4	4	k = 5		k = 1	_	k = 2		k = 3	_	k = 4	_	k = 5	
	i#	[s] <i>a</i>	·#	t[s]	*#	t[s]	i#	[s] <i>a</i>	;#	t[s]	#i	t[s]	<i>i#</i>	t[s]	*#	t[s] ≠	<i>#</i>	t[s]	<i>i#</i>	‡ [8] 1 ±	#i t[# [s]	#: 1	t[s]	#i t[s	# [s] #	#i t[s]	#	i t[s]	
cg-diagonal-1st kind-two sided	569	1.02e+1	148	7.30e+0	111	6.74e+0	16	6.57e+0	3 81	8.54e+0	423 1.4	.46e+1	236 1	04e+1 1	171 9.2	.20e+0 1	43 9.1	0+960'6	125 9.1	17e+0 2	212 9.82	9.82e+0 11	17 7.2	20e+0	99'9 98	2 0+e999:	71 6.59e+0	+0 63	6.83e	0+
cg-diagonal-4th kind-two_sided	319	1.21e+1	183	9.02e+0	125	7.60e+0	26	7.02e+0	79	6.62e+0	504 1.7	74e+1	291 1	.28e+1	201 1.0	08e+1 1	156 9.9	0+e16	132 9.7	73e+0 2	251 1.16	e+1 14	44 8.8	38e+0	7.87	7e+0 7	78 7.27e+0	79 0+	9.52e	0+
cg-fdm_symm_1_f-1st_kind-two_sided	122	5.64e+0	89	4.58e+0	21	4.53e+0	43	4.71e+0	38	4.97e+0	193 7.9	93e+0	107 6	.28e+0	79 6.0)5e+0 (67 6.3	33e+0	59 6.	32e+0 8	80 4.57	.57e+0 4	17 4.6	.02e+0	34 3.89	2 0+a	29 4.13e+0	+0 24	4.11e	0+
cg-fdm_symm_1_f-4th_kind-two_sided	148	0+98.9	22	5.74e+0	29	5.25e+0	46	5.04e+0	37 4	4.85e+0	229 9.4	45e+0	133 7	.82e+0	93 7.1	14e+0	74 6.9	0+e86	59 6.	2e+0 8	97 5.55	e+0 2	55 4.7	20e+0	40 4.55	.55e+0 8	30 4.27e	+0 25	4.29e	0+
cg-fdm_symm_2_f-1st_kind-two_sided	81	5.77e+0	45	5.28e+0	35	5.59e+0	27	5.65e+0	23	5.91e+0	128 7.9	.94e+0	7.1 7	.14e+0	53 7.4	13e+0	42 7.8	53e+0	38 8.2	7e+0	66 6.13	.13e+0 3	38 5.8	.89e+0	28 6.13	13e+0 2	22 6.21e+0	+0 20	6.94e	0+
cg-fdm_symm_2_f-4th_kind-two_sided	96	6.85e+0	26	6.58e+0	40	6.53e+0	30	6.29e+0	3e (6.67e+0 1	151 9.3	37e+0	8 98		61 8.1	24e+0	49 8.7	0+e94	39 8.4	(0++0)	78 7.26	.20e+0 4	45 6.9	0+986°	33 7.18	.18e+0 2	25 7.05e+0	+0 15	6.59e-	0+
cg-fdm symm v f-1st kind-two sided	98	5.28e+0	8#	4.55e+0	37	4.77e+0	31	5.01e+0	27 [5.27e+0 1	134 7.3	.51e+0	9 92	54e+0	57 6.0	32e+0	46 6.7	0+e92	40 7.0	7.09e+0 6	68 5.21	.21e+0 4	40 4.8	0+998°1	29 4.83	.83e+0 2	23 4.85e+0	+0 21	5.37e+(0+
cg-fdm_symm_v_f-4th_kind-two_sided	102	6.26e+0	29	5.60e+0	42	5.40e+0	33	5.36e+0	27 5	5.29e+0	159 8.9	93e+0	92 7		8.7 7.8	83e+0 §	52 7.6	63e+0	42 7.4	.44e+0 8	80 6.15	15e+0 4	47 5.7	.70e+0	35 5.80	3 0+e	27 5.69e+0	+0 22	5.65e	9
gmres-fdm_post_1 f-1st_kind-two_sided	151	8.80e+0	99	5.29e+0	46	4.82e+0	37	4.65e+0	31 4	4.70e+0	262 1.3	.38e+1	120 8		82 7.3	38e+0	64 7.0	01e+0	54 6.9	8 0+e16	87 6.04e+(_	41 4.0	05e+0	30 3.90	3.90e+0 2	24 3.83e+0	+0 22	4.19e+(0+
gmres-fdm_post_1 f-1st_kind-one_sided	147	8.53e+0	65	5.22e+0	45	4.62e+0	38	4.75e+0	32 4	4.81e+0 5	233 1.3	.22e+1	121 8	.71e+0	82 7.4	12e+0 (63 6.9	0++06	54 6.	8 0+e16.	89 6.17	.17e+0 4	11 4.6	1.04e+0	30 3.89	2 0+a	25 4.02e+0	+0 22	4.19e	9
gmres-fdm post 1 f-4th kind-two sided	199	1.16e+1	81	6.51e+0	13	5.64e+0	41	5.11e+0	32 4	4.82e+0 2	259 1.3	.37e+1	154 1	.10e+1	104 9.3	38e+0	7.0 7.0	.65e+0	55 7.(7.09e+0 1	19.7 60	.61e+0 5	52 5.1	5.17e+0	36 4.68	F.68e+0 8	27 4.31e+0	+0 23	4.39e+(9
gmres-fdm post 1 f-4th kind-one sided	991	0.67e+0	11	5.71e+0	44	4.54e+0	34	4.30e+0	27 4	4.01e+0	252 1.3	.33e+1	124 8	0+968°	80 7.3	3e+0	58 6.3	.36e+0	45 5.7	.78e+0 5	99'9 96	.66e+0 4	45 4.4	.48e+0	29 3.75	.75e+0 2	23 3.68e+	3+0 20	3.85e+(9
gmres-fdm_post_2_f-1st_kind-two_sided	64	5.31e+0	34	4.49e+0	52	4.47e+0	21	4.85e+0	18	5.13e+0 1	114 8.	28e+0	58 6	57e+0	39 6.0	3.00e+0 3	32 6.3	.36e+0	26 6.1	.13e+0 4	48 5.06	5.00e+0 2	27 4.5	54e+0	21 4.99	.99e+0 1	15 4.50e+0	+0 13	4.79e+(2
gmres-fdm_post_2_f-1st_kind-one_sided	17	5.84e+0	34	4.51e+0	22	4.51e+0	22	5.07e+0	19	5.38e+0 1	115 8.	43e+0	57 6		39 6.0	04e+0	31 6.	20e+0	27 6.3	.37e+0 5	52 5.35	.39e+0 2	28 4.7	.73e+0	21 5.00	.00e+0	18 5.59e+0	+0 14	5.14e+(2
gmres-fdm post 2 f-4th kind-two sided	74	6.13e+0	37	4.85e+0	27	4.85e+0	22	5.06e+0	18	5.13e+0 1	138 1.0	.01e+1	64 7	.31e+0	43 6.6	.62e+0 3	34 6.7	.71e+0	27 6.3	.38e+0 = 2	57 5.88	5.88e+0 3	30 5.0	0+e+0	22 5.21	.21e+0 1	17 5.30e+0	+0 13	4.78e+1	0+
gmres-fdm post 2 f-4th kind-one sided	73	6.04e+0	34	4.50e+0	22	4.47e+0	20	4.65e+0	14	8.88e+0	124 9.	12e+0	56 6	38e+0	37 5.7	.75e+0 2	29 5.6	0+e29	24 5.7	.70e+0 =	55 5.68	.68e+0 2	28 4.7	.74e+0	20 4.79	79e+0 1	15 4.52e+0	+0 12	4.44e+(2
gmres-fdm_post_v_f-1st_kind-two_sided	62	5.85e+0	33	4.24e+0	30	4.34e+0	22	4.51e+0	21 4	4.57e+0	123 8.	41e+0	57 5	9.67e+0	41 5.4	.40e+0 3	34 5.0	.63e+0	30 5.8	9.88e+0 (60 5.34	.34e+0 3	33 4.5	54e+0	25 4.57	.57e+0 2	20 4.68e+0	+0 18	5.14e+(2
gmres-fdm_post_v_f-1st_kind-one_sided	92	5.69e+0	40	4.39e+0	30	4.35e+0	56	4.66e+0	22 4	4.79e+0 1	123 8.	48e+0	58 5		42 5.1	.56e+0 3	35 5.8	85e+0	30 5.9) 0+e16	63 5.65	e+0 3	32 4.4	.44e+0	25 4.58	58e+0 2	21 4.91e+0	+0 15	5.40e+(2
gmres-fdm post v f-4th kind-two sided	94	6.94e + 0	20	5.50e+0	32	5.10e+0	27	0+98e+0	23	4.99e+0	147 1.0	.01e+1	75 7	.49e+0	51 6.7	.76e+0 3	38 6.2	.24e+0	31 6.	.21e+0 7	72 6.46	3.40e+0 4	40 5.4	.43e+0	28 5.13	13e+0 2	22 5.10e+0	+0 18	5.14e+(2
gmres-fdm post v f-4th kind-one sided	91	6.78e+0	43	4.69e+0	30	4.34e+0	24	4.33e+0	20 4	4.39e+0 1	140 9.0	0.65e+0	64 6	3.47e+0	41 5.4	.44e+0 3	32 5.3	.37e+0	26 5.1	12e+0 6	67 5.97	e+0 3	35 4.8	.80e+0	25 4.59	.59e+0 2	20 + 71e + 0	10+	5 4.15e+t	0+

Table 7: Anisotropic mesh $(x_2/x_0 = 50, p = 7)$

$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	_				- B.	oisect		-		_		-		gc	go-to-one	-	,	-			-	-	-	decrease-by-one	-one			
## (4s) ## ($\kappa = 1$		z = z	3	0 =	X	+	C = 3	-	v = 1	-	$\kappa = z$	_	$\kappa = 3$	3	$\kappa = 4$	2	v = 0	v = 1		$\kappa = z$	-	$\kappa = 3$	-	$\kappa = 4$	_	$\kappa = 0$
33 7.024-0 18.4 5.314-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 10.0 7.034-0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	11-	<i>įi t</i> [s]	_	t[s]	<i>i#</i>	t[s]	<i>i#</i>	_		-		#	f[s]	i#	t[s]	<i>i#</i>	t[s]	<i>i#</i>	t[s]	##	f[s] #	#i t	t[s] =	#i t[s]	s] #	i $t[s]$	i#	t[s]
307 1104+0 225 5.60++0 135 1.38+0 13 3.78+0 13 3.78+0 13 3.78+0 13 3.88+0 23 3.88+0 3.28+0 23 2.56+0 30 2.56+0 20 3.78+0 14 3.88+0 20 2.56+0 44 2.56+0 20 3.78+0 15 3.78+0 20 3.78+0 14 3.88+0 20 3.78+0 20 2.56+0 20 3.78+0 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20 3.78+0 20 3.78+0 20 3.78+0 20 3.78+0 20 3.78+0 20 3.78+0 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20 20 3.78+0 20		33 7.62e+0	184	5.31e+0		4.73e+0	4	_	4	_	1.	_) 8.12e+0	0 222	7.29e+0	185	7.13e+0	191	7.12e+0	190 6.9	6.99e+0 10	107 5.2	5.25e+0 7	4	.62e+0 58	8 4.31e+0	0 52	4.51e+0
123 33.80++0 66 2.18++0 22 2.28++0 32 2.56++0 23 2.56++0 13 2.56++0	ind-two_sided 3	97 9.11e+0		6.50e+0	=	5.57e+0	E,	-	4	-	_	_	9 1.03e+1	1 268	8.80e+0	208	8.03e+0	168	7.46e+0	225 8.2	.27e+0 13	130 6.3	.38e+0 8	86 5.29e	e+0 68	8 5.04e+0	0 52	4.50e+
M7 319e+0 55 321+0 96 232e+0 35 326e+0 35 326e+0 35 326e+0 35 326e+0 35 326e+0 35 346e+0 35 366e+0 35 346e+0 35 346e+0 35 366e+0 36 366e+1 37 366e+0	-1st_kind-two_sided	23 3.30e+0	_	2.49e+0	25	2.53e+0	64	-	5	-	70	HO 112	2 3.93e+0	83	3.76e+0	29	3.70e+0	99	3.92e+0	61 2.7	2.72e+0 3	36 2.40	2.40e+0 2	26 2.31e	:31e+0 20	0 2.21e+0	0 18	2.39e+(
78 3184+0 55 2184+0 55 2184+0 58 2184+0 57 3184+0 73 318	-4th kind-two sided 1	47 3.94e+0	_	3.21e+0	23	2.87e+0	44 2.0	_	64	_	ıć.	_	7 4.81e+0	96 0	4.33e+0	7.5	4.13e+0	65	4.24e+0	75 3.3	3.35e+0 4	42 2.8	.81e+0	31 - 2.76e	.76e+0 22	2 2.44e+0	0 18	2.39e +
94 3376+40 22 3384+4 39 3846+4 31 3546+9 23 3476+0 125 5686+4 57 3476+0 13 3576+0 34 3584+1 31 3546+0 24 3476+0 14 3384+1 31 3546+0 24 3476+0 14 3384+1 31 3546+0 24 3476+0 15 3476+1 31 3546+0 15 3484+1 10 15 5484+1 10 10 10 10 10 10 10 10 10 10 10 10 10	:1st_kind-two_sided	9 3.19e + 0	_	2.92e+0	83	2.95e+0	33	_	eri	_	4	FO 73	4.35e+0	0 52	4.28e+0	44	4.62e+0	88	4.85e+0	34 2.5	55e+0 1	19 2.4	0++0	16 2.86e	e+0 1	1 2.54e+0	01 0	2.82e+(
78 326+0 44 338+0 49 345+0 47 336+0 07 336+0 07 336+0 07 56-6+0 18 326+0 18 356+0 18 36-6+0 18 3	-4th kind-two_sided	14 3.80e+0	_	3.36e+0	æ	3.49e+0	e	_	જે	_	ī.	F0 87	5.20e+0	0 62	5.12e+0	49	5.16e+0	æ	5.00e+0	44 3.5	.29e+0 2	23 2.9	91e+0	16 2.86e	:86e+0 12	9 2.77e+0	0 11	3.11e+(
92 24.08+4-0 53.377+4-0 39.476+4-0 35.476+4-0 36.408+4-0	-1st_kind-two_sided	6 3.47e + 0	_	3.30e+0	34	3.54e+0	0.0	_	κi	_	ıć.	_	4.97e+0	0 53	5.24e+0	43	5.44e+0	88	5.88e+0	39 3.	12e+0 %	23 3.1	.14e+0	17 3.28	3.28e+0 14	4 3.50e + 0	0 12	3.66e+(
135 Collected 55 Subsected 55 Subsected 55 Subsected 55 Subsected 55 Subsected 31 2.556++0 38 1.556++0 38 1.556++0 38 1.556++0 38 1.556++0 38 1.556++0 38 1.556++0 38 2.556++0 38 2.556++0 38 2.556++0 38 2.556++0 39 2.556++0 39 2.556++0 30 2.556++0 30 3.556++0	-4th kind-two sided	12 4.20e+0	_	3.97e+0	33	4.07e+0	-	_	4	_	9	_	6.11e+0	0 62	6.12e+0	48	6.08e+0	88	5.88e+0	46 3.6	.68e+0	3.5	2e+0	19 3.66e	:66e+0 15	5 3.74e+0	0 12	3.66e+(
149 Gales-10 55 246+-0 55 246+-0 45 246+-0 45 1133 189 Gales-10 58 41024-0 45 4006-0 42 2876-0 33 2556-0 45 116-1 17 173 580e-0 71 2326-0 37 2106-0 40 1328-1 112 18 385e-0 32 236-0 37 2106-0 40 1328-1 112 18 385e-0 32 236-0 37 236-0 35 536-0 35 18 385e-0 32 236-0 37 236-0 35 536-0 35 18 385e-0 32 236-0 37 236-0 35 536-0 35 536-0 35 18 385e-0 38 38 38 38 36 36 36 40 36 36 40 36 36 40 36 36 40	f-1st kind-two sided 1	35 4.62e+0	_	2.96e+0	45	2.57e+0	21	_	2	_	-	_	8 5.94e+0	68 0	4.76e+0	89	4.35e+0	929	4.18e+0	56 2.5	2.95e+0 3	31 2.4	2.42e+0	23 2.30	9.30e + 0 19	3 2.38e+0	0 17	2.57e+0
180 Goldschort 88 Alzeich 88 2.05m-0 4.0 17.1 173 5.88e+0 13 2.20m-0 2 2.75m-0 38 2.85m-0 27 2.15m-0 40 132m-1 112 18 3.18e+0 3.3 2.6m-0 2.1 2.6de+0 40 2.93m-0 15 5.53m-1 15 18 3.5m-0 4.3 2.0m-0 2.1 2.6de+0 40 2.93m-0 15 5.53m-0 5.53m-0 <t< td=""><td>f-1st kind-one sided 1</td><td>49 5.09e+0</td><td>_</td><td>2.96e+0</td><td>45</td><td>2.57e+0</td><td>21</td><td>_</td><td>2</td><td>_</td><td>-ï</td><td>_</td><td>3 5.73e+0</td><td>68 0</td><td>4.77e+0</td><td>69</td><td>4.42e+0</td><td>25</td><td>4.18e+0</td><td>57 2.5</td><td>2.98e+0 S</td><td>30 2.2</td><td>27e+0</td><td>23 2.27e</td><td>.27e+0 20</td><td>0.2.48e+0</td><td>0 17</td><td>5.56e+C</td></t<>	f-1st kind-one sided 1	49 5.09e+0	_	2.96e+0	45	2.57e+0	21	_	2	_	-ï	_	3 5.73e+0	68 0	4.77e+0	69	4.42e+0	25	4.18e+0	57 2.5	2.98e+0 S	30 2.2	27e+0	23 2.27e	.27e+0 20	0.2.48e+0	0 17	5.56e+C
173 Saske+0 71 Saske+0 71 Saske+0 71 Saske+0 71 Saske+0 71 Saske+0 71 Saske+0 23 Saske+0 <	f-4th kind-two sided 1	89 6.45e+0	_	4.02e+0	活	3.07e+0	674	_	2	÷	_	F1 171	1 7.34e+0	9 112	5.99e+0	80	5.14e+0	25	4.33e+0	69 3.6	.63e+0 3	38 2.8		26 2.58	9.58e+0 21	1 2.61e+0	0 18	2.71e+(
66 316+6 33 2.83+0 25 2.85+0 25 2.85+0 12 2.854+0 10 2.829+0 125 5.83+0 15 5.85+0 15 5	f-4th kind-one sided	73 5.89e+0	_	3.22e+0	45	2.57e+0		_	2.	÷	-	F1 142	2 6.10e+0	0 87	4.65e+0	61	3.96e+0	89	3.63e+0	62 3.5	3.28e+0 3	33 2.5	52e+0 2	23 2.28e	.28e+0 18	s 2.26e+0	13	1.88e+
71 3356+0 34 256++0 35 256++0 12 256+0 19 296+0 130 5775+0 56 80 3806+0 40 2200+0 2200+0 22 256+0 19 2416+0 10 5200+0 130 5775+0 75 81 3576+0 37 2500+0 22 256+0 19 2416+0 11 2476+0 13 576+0 13 576+0 13 5200+0 12 5200+0 13 5200+0 10 5200	f-1st kind-two sided	6 3.11e+0	_	2.43e+0	22	2.45e+0	61	_	- 5	_	r.c.	_	3.69e+0	9 41	3.72e+0	33	3.84e+0	83	3.86e+0	29 2.3	.38e+0 1	19 2.6		11 2.116	11e+0 10) 2.48e+0	6 0	2.75e+(
80 SINCH-10 40 22000-10 29 2586-10 23 25876-10 23 2258-10 135 6578-40 77 57 57 5758-10 20 2688-10 25 2588-10 135 6578-40 77 57 5758-10 27 2288-40 12 2488-40 13 2288-40 135 6578-40 77 5788-10 20 2588-40 12 2588	f-1st kind-one sided	1 3.35e+0	_	2.50e+0	36	2.56e+0	61	_	2	_	ri.	_	3.79e+0	0 40	3.65e+0	33	3.84e+0	53	4.02e+0	33 2.7	75e+0 1	18 2.5	52e+0	13 2.476	47e+0 10	0.2.49e+0	6 0	2.76e+(
75 3.576+0 36 2.64+0 25 2.66+0 19 2.416+0 15 2.25+0 139 6.20e+0 62 45 2.85+0 12.85+0 12.85+0 12.85+0 13 2.85+0 19 2.86+0 18 2.86+0 18 2.85+0 15 2.85+0 77 4.016+0 40 39 3.50 3.50 2.88+0 34.25+0 19 2.86+0 15 2.85+0 77 4.016+0 40 39 3.50 3.50 3.50 3.50 3.50 3.50 3.50 3.50			_	2.90e+0	53	2.84e+0		_	21	_	9	H 75	5.06e+0	9 49	4.49e+0	37	4.26e+0	8	4.13e+0	36 2.5	2.98e+0 2	20 2.7	2.77e+0	14 2.66	(1 0+999	1 2.72e+0	6 0	2.75e+(
51 2X86+0 27 2298+0 21 246+0 18 2X86+0 15 2X6+0 73 8376+0 39 38 52 8X64+0 28 2386+0 19 2X64+0 73 8376+0 40 39 38 64 64 64 64 64 64 64 64 64 64 64 64 64			_	2.64e+0	36	2.56e+0	6.4	_	2	_	9	_	4.25e+0	0 40	3.65e+0	30	3.44e+0	22	3.48e+0	35 2.8	1.89e+0 1	19 2.6	:64e+0	12 2.29e	.29e+0 9		0 7	2.19e+
53 2.86e+0 28 2.38e+0 22 2.56e+0 19 2.85e+0 15 2.65e+0 77 4.01e+0 40 3 64 3.45e+0 34 2.00e+0 24 2.77e+0 19 2.84e+0 15 2.65e+0 97 4.96e+0 50 4			27	2.29e+0	21	2.44e+0	18 2.7	_	21	_	c	_	3.13e+0	9 28	3.07e+0	24	3.35e+0	21	3.59e+0	28 2.1	.51e+0 1	15 2.2	24e+0	11 2.32¢	.32e+0 9		8 0	2.71e+(
64 3.45e+0 34 2.90e+0 24 2.77e+0 19 2.84e+0 15 2.68e+0 97 4.98e+0 50 4.			_	2.38e+0	22	2.56e+0		_	2	_	4	_	3.24e+0	0 29	3.19e+0	24	3.37e+0	21	3.60e+0	28 2.1	.53e+0 1	15 2.2	23e+0	12 2.52e	.52e+0 9		6 0	3.03e+(
C. C	'f-4th kind-two sided (4 3.45e+0	_	2.90e+0	24	2.77e+0	19 2.8	_	oi.	_	4.98e-	HO 20	4.05e+0	9 34	3.78e+0	56	3.62e+0	21	3.60e+0	34 3.0	1.08e+0 2	20 3.00	.0ee+0	13 2.72e	72e+0 10	3.75e+0	8 0	2.74e+(
30 2.57e+0 21 2.46e+0 18 2.72e+0 13 2.30e+0 87 4.50e+0 42		i8 3.13e+0	30	2.57e+0	21	2.46e+0	18 2.7	2.72e+0	13 2.30	e+0 87	4.50e+0	+0 42	3.40e+0	0 28	3.09e+0	22	3.10e+0	10	3.29e+0	30 2.7	.70e+0 1	18 2.7	2.77e+0	11 2.32¢	:32e+0 9	2.48e+0	7	2.47e+0

2 Kershaw mesh

Table 8: Kershaw mesh ($\epsilon=1.0,\,p=4$)

				bi	bisect				_				go	go-to-one								-	decrease-by-one	by-one			
_	k = 1	-24	k = 2	-2	k = 3	k = 4	_	k = 5	_	k = 1	_	k = 2	_	k = 3	-2	k = 4	-2	k = 5	k = 1	_	k = 2	2	k = 3	~	k = 4	_	k = 5
	#i t[s]	?#	t[s]	;#	t[s]	#i t[s]	i# [s	t[s]	·#-	[s] <i>4</i>	#	[s]	·#	t[s]	· #	t[s]	i#	t[s]	<i>i#</i>	t[s]	#	t[s]	1 1#	t[s] 1	#: 1	t[s] #	#i t[s]
g-diagonal-1st kind-two_sided	8 1.34e-1	7	1.49e-1	5	1.32e-1	4 1.25e-	e-1 8	1.09e-1	16	2.35e-1	6 1	1.70e-1	9	1.38e-1	2	1.36e-1	5	1.57e-1	6 1	.21e-1	6 1	.60e-1	5 1.0	.65e-1	4 1.5	.58e-1	3 1.39e-1
cg-diagonal-4th_kind-two_sided	9 1.48e-1	20	1.07e-1	4	1.05e-1	4 1.25e-	e-1 3	1.09e-1	19	2.79e-1	11	2.07e-1	∞	1.84e-1	9	1.63e-1	20	1.58e-1	7	.40e-1	4 1	.07e-1	.8 9.	99e-2	3 1.1	.19e-1	3 1.39e-1
cg-fdm_symm_1_f-1st_kind-two_sided	5 1.02e-1	7	2.06e-1	20	1.94e-1	4 1.92e-	e-1 3	1.72e-1	1-	1.26e-1	1	1.79e-1	10	1.67e-1	7	1.65e-1	4	1.94e-1	1 1	.02e-1	7 2	61e-1	5 2.	2.46e-1	4 2.4	2.45e-1	3 2.20e-1
cg-fdm.symm_1_f-4th_kind-two_sided	6 1.22e-1	*	1.19e-1	4	1.55e-1	3 1.44e-1	e-1 3	1.71e-1	6	1.61e-1	1 2	1.29e-1	4	1.34e-1	4	1.64e-1	3	1.47e-1	5	.26e-1	4 1	1.50e-1	4 1.3	1.97e-1	3 1.8	1.84e-1	3 2.20e-
cg-fdm symm 2 f-1st kind-two sided	5 1.55e-1	9	3.03e-1	2	3.51e-1	3 2.71e-	e-1 3	3.30e-1	1-	1.87e-1	9 1	2.59e-1	20	2.99e-1	4	3.05e-1	4	3.72e-1	5 1	.99e-1	6 3	3.97e-1	5 4.8	1.63e-1	3.5	7e-1	3 4.36e-1
cg-fdm_symm_2_f-4th_kind-two_sided	6 1.86e-1	8	1.52e-1	4	2.84e-1	3 2.72e-	e-1 3	3.29e-1	∞	2.13e-1	1 4	1.73e-1	4	2.39e-1	7	3.06e-1	3	2.80e-1	6 2	2.38e-1	3 1	1.99e-1	3 2.	2.78e-1	3.5	3.58e-1	3 4.36e-1
cg-fdm_symm_v_f-1st_kind-two_sided	5 1.35e-1	7	2.88e-1	2	2.78e-1	4 2.79e-	e-1 3	2.53e-1	9	1.46e-1	7	2.60e-1	20	2.51e-1	4	2.52e-1	4	3.03e-1	4	1.38e-1	7 3	3.65e-1	5 3.	3.55e-1	4 3.6	3.60e-1	3.27e-1
cg-fdm symm v f-4th kind-two sided	5 1.34e-1	4	1.65e-1	4	2.22e-1	3 2.11e-	e-1 3	2.52e-1	7	1.70e-1	1 4	1.50e-1	4	2.01e-1	es	1.90e-1	8	2.28e-1	5 1	.66e-1	4 2	2.10e-1	3 2.	2.14e-1	3 2.7	2.70e-1	3.26e-1
gmres-fdm post 1 f-1st kind-two sided	4 9.52e-2	2 7	2.35e-1	20	2.25e-1	4 2.30e-1	e-1 3	2.19e-1	7	1.42e-1	8	2.33e-1	10	1.94e-1	4	1.99e-1	4	2.35e-1	4 1	1.18e-1	7 2	2.94e-1	4 2.	2.37e-1	4 2.9	2.97e-1	3 2.83e-1
gmres-fdm post 1 f-1st kind-one sided	11 2.59e-1	7	2.32e-1	9	2.62e-1	5 2.76e-1	e-1 4	2.73e-1	10	2.08e-1	8	2.32e-1	9	2.28e-1	10	2.38e-1	4	2.33e-1	11 3	3.12e-1	7 2	2.90e-1	5 2.	2.84e-1	4 2.9	2.94e-1	1 3.52e-1
gmres-fdm post 1 f-4th kind-two sided	5 1.16e-1	4	1.41e-1	4	1.85e-1	3 1.83e-1	e-1 3	2.18e-1	∞	1.63e-1	1 4	1.22e-1	4	1.60e-1	4	1.97e-1	8	1.86e-1	5 1	1.44e-1	3 1	1.42e-1	3 1.	1.89e-1	3 2.3	2.36e-1	3 2.83e-1
gmres-fdm_post_l f-4th_kind-one_sided	7 1.60e-1	9 1	2.00e-1	20	2.29e-1	5 2.76e-1	e-1 2	3.32e-1	6	1.856-1	7	2.03e-1	9	2.27e-1	10	2.38e-1	20	2.82e-1	7 1	1.99e-1	6 2	2.52e-1	5 2.	2.84e-1	5 3.5	3.55e-1	5 4.25e-1
gmres-fdm post 2 f-1st kind-two sided	6 2.07e-1	6	4.97e-1	7	5.46e-1	5 5.21e-1	e-1 4	5.27e-1	9	1.78e-1	01 2	4.72e-1	7	4.63e-1	10	4.39e-1	4	4.44e-1	6 2	7.999°	8 5	5.81e-1	7 7	7.21e-1	5 6.9	6.90e-1	1 7.02e-1
gmres-fdm post 2 f-1st kind-one sided	13 4.51e-1	6	4.98e-1	∞	6.17e-1	6 6.10e-1	e-1 2	6.35e-1	6	2.66e-1	10	4.74e-1	7	4.66e-1	9	5, 16e-1	22	5.37e-1	11 4	1.77e-1	9 6	6.48e-1	8 8.	8.12e-1	0.8 9.0	8.06e-1	5 8.43e-1
gnres-fdm post 2 f-4th kind-two sided	5 1.75e-1	4	2.40e-1	4	3.36e-1	4 4.32e-1	e-1 3	4.20e-1	20	1.51e-1	1 4	2.03e-1	4	2.84e-1	4	3.66e-1	4	4.45e-1	5 2	.26e-1	4 3	3.16e-1	4 4.	4.45e-1	4 5.7	5.74e-1	3 5.61e-1
gmres-fdm post 2 f-4th kind-one sided	8 2.72e-1	7	3.94e-1	7	5.47e-1	6 6.10e-1	Pe-1 7	8.54e-1	7	2.07e-i	7	3.36e-1	7	4.64e-1	7	5.92e-1	7	7.22e-1	7 3	3.06e-1	7 5	5.13e-1	7 7	7.20e-1	0.8 9.0	7e-1	7 1.13e+(
gmres-fdm_post_v_f-1st_kind-two_sided	6 1.83e-1	8	3.69e-1	9	3.80e-1	5 4.07e-1	e-1 4	4.07e-1	7	1.94e-1	8	3.34e-1	9	3.42e-1	10	3.68e-1	4	3.68e-1	5 1	.93e-1	8 4	1.999T	6 4.8	1.87e-1	5 5.2	5.25e-1	1 5.27e-1
gmres-fdm post v f-1st kind-one sided	12 3.69e-1	6	4.13e-1	7	4.37e-1	6 4.77e-	e-1 2	4.96e-1	00	2.21e-i	6 1	3.77e-1	7	3.96e-1	r0	3.72e-1	10	4.52e-1	12 4	.51e-1	8 4	1.ege-1	7 5.	5.58e-1	5 5.2	5.24e-1	6.36e-
gmres-fdm post v f-4th kind-two sided	5 1.54e-1	4	1.98e-1	4	2.68e-1	3 2.69e-1	e-1 3	3.25e-1	20	1.40e-	1 4	1.78e-1	4	2.41e-1	4	3.05e-1	3	2.95e-1	5 1	.93e-1	4 2	.54e-1	4 3,	3.45e-1	3.4	3.49e-1	3 4.24e-
gmres-fdm_post_v_f-4th_kind-one_sided	7 2.12e-1	4	3.24e-1	9	3.78e-1	6 4.77e-1	e-1 6	5.73e-1	9	1.67e-i	7	2.95e-1	9	3.44e-1	9	4.32e-1	9	5.20e-1	6 2	2.27e-1	6 3	3.57e-1	6 4.8	L.85e-1	6 6.1	6.14e-1	6.34e-

Table 9: Kershaw mesh $(\epsilon=0.99,\,p=4)$

					bisect									go-to-one	one				_				þ	lecrease-by-one	v-one			
_	k = 1	_	k = 2	_	k = 3	-4	k = 4	k = 5	- 2	. k	k = 1	ķ.:	k = 2	k = 3	~	k = 4	4	k = 5	_	k = 1	_	k = 2	_	k = 3	_	k = 4	_	k = 5
	#i t[s]	i#	i t[s]	#	[8]	·# -	[s]	;#	t[s]	i#	t[s]	i#	[s]	**	t[s]	i#	[s]	1 1#	‡ [8] ±	#i t[± [8] ±	#: t	t[8]	#i t[# [s]	#i t[s]	-	#i t[s]
cg-diagonal-1st_kind-two_sided	8 1.93e-1	7 7	2.44e-1	-1 5	2.30e-1	4	2.28e-1	3	2.03e-1	16	3.33e-1	6	2.66e-1	6 2.	.30e-1	5 2	.37e-1	5 2.8	2.85e-1	7.1 9	1.74e-1	6 2.5	2.56e-1	5 2.8	.86e-1 4	4 2.85e-	e-1	3 2.53e-1
cg-diagonal-4th_kind-two_sided	9 2.17e-1	P-1 2	1.75e-1			es	1.70e-1	8	2.03e-1	19	3.95e-1	Ξ	3.26e-1	8 3.1	.10e-1	6 2	.87e-1	5 2.8	2.85e-1	7 2.03e-	je-1	4 1.7	1.72e-1	8 1.7	.70e-1	3 2.12	e-1	3 2.55e-1
cg-fdm_symm_1_f-1st_kind-two_sided	5 1.43e.	P-1 7	3.06e-1	.1 5	2.98e-1	4	2.98e-1	3	2.68e-1	7	1.71e-1	7	2.57e-1	5 2.	2.47e-1	4 2	2.46e-1	4 2.5	2.99e-1	4 1.3	1.38e-1	7 3.8	3.81e-1	5 3.7.	3.75e-1 4	4 3.77e-1	e-1	3 3.40e-1
cg-fdm_symm_1_f-4th_kind-two_sided	6 1.71e-i	e-1 4	1.77e-1	.1 4	2.39e-1		2.23e-1	3	2.69e-1	6	2.21e-1	10	1.87e-1	4 1.	.99e-1	4 2	2.49e-1	3 2.	2.22e-1	5 1.7.	1.72e-1	4 2.2	2.20e-1	4 3.00	3.00e-1	3 2.81e-1	e-1	3 3.42e-1
cg-fdm_symm_2_f-1st_kind-two_sided	5 1.96e-1	9 1-9	3.91e-1	.1	4.55e-1	8	3.50e-1	3	1.28e-1	-	2.34e-1	9	3.26e-1	5 3.	3.78e-1	4 3	3.89e-1	4 4.	4.76e-1	5 2.4	2.49e-1	6 5.0	5.05e-1	5 5.9	5.96e-1	3 4.56e-1	e-1	3 5.60e-1
cg-fdm_symm_2_f-4th_kind-two_sided	6 2.35e-1	P-1 8	-996-I	-1 4	3.67e-1		3.51e-1	3	1.29e-1	8	2.67e-1	4	2.19e-1	4 33	3.04e-1	4 3	3.90e-1	3 3.	3.54e-1	6 2.9	2.98e-1	3 2.5	2.52e-1	3 3.5	3.53e-1	3 4.59e-1	e-1	3 5.61e-1
cg-fdm_symm_v f-1st_kind-two_sided	5 1.81e-1	P-1 7	3.95e-1	.1	3.86e-1	4	3.90e-1		3.51e-1	9	1.94e-1	œ	3.99e-1	5 3.	3.37e-1	4 3	3.39e-1	4 4.	4.12e-1	4 1.7	1.76e-1	7 4.9	4.93e-1	5 4.8	1.87e-1	4 4.96e-1	e-1	3 4.47e-1
cg-fdm_symm_v f-4th_kind-two_sided	5 1.82e-i	e-1 4	2.28e-1	.1 4	3.11e-1		2.93e-1		3.54e-1	-	2.27e-1	4	2.00e-1	4 2.	2.71e-1	3 2	2.55e-1	3 3.0	3.07e-1	5 2.2	2.21e-1	4 2.8	2.83e-1	3 2.8	2.89e-1	3 3.70e-1	e-1	3 4.50e-1
gmres-fdm_post_l f-1st_kind-two_sided	4 1.27e-]	6-1 7	3.21e-1	.1	3.20e-1	4	3.33e-1		3.21e-1	7	1.84e-1	œ	3.10e-1	5 2.	2.68e-1	4 2	2.77e-1	4 3.	3.33e-1	4 1.5	1.56e-1	7 4.0	1.00e-1	4 3.3	3.34e-1 4	4 4.22e-1	e-1	3 4.09e-1
gmres-fdm_post_l f-1st_kind-one_sided	11 3.33e-1	P-1 8	3.62e-1	.1 6	3.73e-1	22	4.01e-1	4	1.05e-1	10	2.64e-1	8	3.10e-1	6 3.	3.15e-1	5 3	3.35e-1	4 3.	3.34e-1 1	11 4.0.	4.02e-1	7 3.9	3.99e-1	5 4.0.	1.02e-1	4 4.23e-	e-1	4 5.14e-1
gmres-fdm_post_l f-4th_kind-two_sided	5 1.55e-	e-1 4	1.97e-1	1 4	2.65e-1		2.66e-1		3.21e-1	œ	2.11e-1	4	1.66e-1	4 2.	2.22e-1	4 2	2.78e-1	3 2.0	2.67e-1	5 1.89e-1	Je-1	3 1.9	1.99e-1	3 2.6	2.67e-1	3 3.38e-	e-1	3 4.09e-1
gmres-fdm_post_l f-4th_kind-one_sided	7 2.11e-1	9 1-9	2.79e-1	.1	3.20e-1	22	4.02e-1	2	1.83e-1	6	2.37e-1	7	2.73e-1	6 3.	3.15e-1	6 3	3.94e-1	5 4.0	1.01e-1	7 2.5	2.56e-1	6 3.4	3.48e-1	5 4.0,	1.03e-1	5 5.10e-1	e-1	5 6.17e-1
gnres-fdm post 2 f-1st kind-two sided	6 2.53e-	P-1 9	6.12e-	.1 7	6.76e-1	22	6.48e-1	4	3.59e-1		2.50e-I	10	5.70e-1	7 5.4	.64e-1	5 5	.37e-1	4 5.4	5.45e-1	6 3.21e-1	[e-1	8 7.0	7.06e-1	7 8.8	8.81e-1	5 8.49e-1	e-1	4 8.66e-
gnres-fdm post 2 f-1st kind-one sided	13 5.42e-1	P-1 9	6.13e-1	.1 8	7.64e-1	9	7.59e-1	2	7.93e-1	9	3.20e-I	10	5.73e-1	7 5.4	5.66e-1	9 9	6.31e-1	5 6.4	6.58e-1 1	11 5.7	5.71e-1	8.7 6	7.88e-1	8 9.9,	9.93e-1 (6 9.91e-1	e-1	5 1.04e+(
gnres-fdm post 2 f-4th kind-two sided	5 2.15e-l	p-1 4	2.98e-1	.1 4	4.19e-1	4	5.40e-1	2	5.27e-1	5	1.83e-1	4	2.49e-1	4 3.	3.48e-1	4 4	.46e-1	4 5.4	5.45e-1	5 2.7.	2.73e-1	4 3.8	3.86e-1	4 5.4	5.46e-1 4	4 7.06e-	e-1	3 6.93e-1
gmres-fdm post 2 f-4th kind-one sided	8 3.31e-1	P-1 7	4.84e-	.1 7	6.76e-1	9	7.57e-1	7	0+990°	,	2.50e-I	7	4.08e-1	7 5.4	5.66e-1	7	7.24e-1	7 8.8	8.80e-1	7 3.6	3.69e-1	7 6.2	6.26e-1	7 8.8	8.80e-1	7 1.14	1.14e+0	7 1.39e+(
gnres-fdm post v f-1st kind-two sided	6 2.35e-	8 1-9	4.76e-1	.1 6	5.01e-1	22	5.37e-1	4	5.39e-1	7	2.44e-1	8	4.21e-1	6 4.	.44e-1	5 4	.69e-1	4 4.	1.72e-1	5 2.4	.44e-1	8 5.9	.93e-1	6 6.3	3.31e-1	5 6.81e-1	e-1	4 6.90e-1
gmres-fdm_post_v_f-1st_kind-one_sided	12 4.63e-1	9-1 B	5.32e-1	1 7	5.71e-1	9	6.29e-1	2	3.49e-1	8	2.77e-1	6	4.75e-1	7 5.4	5.03e-1	5 4	.71e-1	5 5.0	5.69e-1 1	12 5.59	5.59e-1	8 5.9	.95e-1	7 7.28	7.20e-1	5 6.82e-1	e-1	5 8.28e-
gmres-fdm post v f-4th kind-two sided	5 2.00e-	p-1 4	2.58e-	.1 4	3.53e-1	23	3.56e-1	3	1.33e-1	2	1.78e-1	4	2.28e-1	4 3.4	3.09e-1	4 4	.02e-1	3 3.	.77e-1	5 2.4	2.44e-1	4 3.2	3.24e-1	4 4.4	L46e-1 3	3 4.55e-l	e-1	3 5.51e-l
omres-fdm nost v f-4th kind-one sided	7 9.716.1	7	4 20o-1	1	A 070-1	9	6 980-1	9	7 570.1		0 110.1	1	0 790 1	8 4	1000	2	1 212	8 64	6.660.1	86 9	1 020	3 4 2	102	0 0	2 25 2	1 -000	-	0.07-1

Table 10: Kershaw mesh ($\epsilon=0.9,\,p=4$)

					لد	bisect				_					go-to-one	JI.				_				decrea	decrease-by-one				
	-4	k = 1	4	k = 2	<u>_</u>	t = 3	k = 4	4	k = 5	_	k = 1	_	k = 2	_	k = 3	_	k = 4	_	k = 5	_	k = 1	_	k = 2	_	k = 3	4	k = 4	4	12
	i#	t[s]	·#	t[s]	**	[s]	1#1	t[s]	#i t	t[s] #	#: t	t[s]	#: 1	¢[s] ⊭	#i t[t[s] #		t[s] ≠	#i t[s]	1#	[s]	?#	t[s]	i#	t[s]	1#	t[s]	i#	£[8]
cg-diagonal-1st-kind-two_sided	12	2.91e-1	1	2.44e-1	9	2.76e-1	5 2	:.86e-1	4 2.7	_	22 4.5	.58e-1	12 3.5	1.53e-1	9 3.4	3.45e-1 7	7 3.30e-1	le-1	6 3.36e-	.1 9	2.62e-	1 1	3.01e-1	2	2.83e-1	4	2.81e-1	4	3.39e-1
cg-diagonal-4th kind-two sided	14	3.37e-1	œ	2.82e-1	9	2.79e-1	5 2	.86e-1	4 2.7	2.71e-1 2	10	.43e-1	15 4.4	1.46e-1 1	10 3.8	3.84e-1 8	3.80	3.80e-1	6 3.36e-1	-1 12	3.48e-1	9 1	2.59e-1	10	2.87e-1	4	2.83e-1	4	3.40e-1
cg-fdm_symm_1_f-1st_kind-two_sided	œ	2.28e-1	7	3.12e-1	10	2.95e-1	4 2	.98e-1	4 3.6	3.63e-1 1	11 2.t	.69e-1	8 2.5	.99e-1	6 3.0	1.00e-1 5	3.15	15e-1	4 2.97e-1	.1 7	2.45e-1	9	3.32e-1	20	3.71e-1	4	3.75e-1	es	3.38e-1
cg-fdm_symm_1_f-4th_kind-two_sided	10	2.85e-1	9	2.68e-1	*	2.37e-1	4 3	3.00e-1	4 3.6	3.64e-1 1	14 3.4	3.43e-1	8 2.5	99e-1	5 2.4	2.49e-1 5	5 3.14	. 14e-1	4 2.98e-1	.1	3.13e-	20	2.75e-1	4	2.98e-1	4	3.78e-1	33	3.38e-1
cg-fdm symm 2 f-1st_kind-two_sided	6	3.58e-1	2	3.32e-1	20	4.62e-1	4 4	1.72e-1	4 5.8	5.82e-1 1	11 3.7	3.71e-1	6 3.5	.33e-1	6 4.6	.63e-1 5	4.92	92e-1	4 4.78e-1	.1 8	4.04e-	1 4	3.41e-1	20	6.02e-1	4	6.18e-1	23	5.65e-1
cg-fdm.symm.2_f-4th_kind-two_sided	Ξ	4.37e-1	9	3.98e-1	*	3.69e-1	4 4	1.75e-1	4 5.8	5.81e-1 1	14 4.5	1.74e-1	8 4.4	.44e-1	5 3.8	1.86e-1 5	1 4.9	.94e-1	4 4.79e-1	1 10	5.04e-	10	4.27e-1	4	4.81e-1	4	6.23e-1	4	7.62e-1
cg-fdm_symm_v_f-1st_kind-two_sided	œ	2.93e-1	4	4.03e-1	20	3.86e-1	4 3	3.91e-1	4 4.7	1.78e-1	9 2.3	2.92e-1	8 4.0	.03e-1	6 4.0	.09e-1 5	1 4.31	.31e-1	4 4.14e-1	.1 7	3.14e-	7	5.04e-1	20	4.88e-1	4	4.96e-1	4	6.11e-1
cg-fdm symm v f-4th kind-two sided	10	3.67e-1	ro	2.88e-1	4	3.11e-1	4 3	3.93e-1	4 4.7	L.77e-1 1	11 3.5	3.58e-1	6 3.0	3.02e-1	5 3.4	3.42e-1 4	3.42	. 42e-1	4 4.14e-1	.1 8	3.57e-1	7 1	2.84e-1	4	3.93e-1	4	5.00e-1	e	4.49e
gmres-fdm post 1 f-1st kind-two sided	8	2.48e-1	7	3.25e-1	10	3.23e-1	4 3	3.36e-1	4 4.6	1.05e-1 1	11 2.5	2.97e-1	8 3.1	3.14e-1	6 3.1	3.19e-1 5	3.36	.39e-1	4 3.38e-1	.1 7	2.60e-1	9 1	3.53e-1	ro	4.08e-1	4	4.28e-1		4.13e-]
gnres-fdm post 1 f-1st kind-one sided	Ξ	3.37e-1	6	4.12e-1	-	4.36e-1	6 4	4.75e-1	5 4.5	.90e-1	12 3.1	3.25e-1	9 3.1	3.53e-1 ,	7 3.6	3.67e-1 6	3.98e-1	e-1	6 4.77e-1	= -	4.06e-1	8	4.58e-1	9	4.77e-1	ю	5.16e-1	20	6.23e-1
gmres-fdm post 1 f-4th kind-two sided	10	3.06e-1	2	2.40e-1	4	2.68e-1	4 3	3.37e-1	4 4.6	4.06e-1 1	13 3.5	3.57e-1	7 2.5	2.77e-1	5 2.7.	2.73e-1 5	5 3.40e-1	le-1	4 3.39e-1	.1 9	3.33e-1	1 2	3.00e-1	4	$3.39e{-1}$	e	3.43e-1	ec	4.16e-1
gmres-fdm_post_1 f-4th_kind-one_sided	Ξ	3.37e-1	7	3.24e-1	7	4.35e-1	6 4	4.75e-1	6 5.7	5.72e-1 1	13 3.1	3.56e-1	8 3.	3.15e-1	7 3.6	3.68e-1 7	4.55	.58e-1 (6 4.78e-1	.1	3.32e-	1 2	4.04e-1	9	4.78e-1	9	6.05e-1	9	7.30e-1
gnres-fdm post 2 f-1st kind-two sided	œ	3.37e-1	œ	5.57e-1	9	5.99e-1	5 6	6.58e-1	4 6.7	6.70e-1	9 3.1	8.24e-1	8 4.0	1.69e-1 (6.4.9	.99e-1 5	5.45e-1	ie-1	4 5.55e-1	.1 7	3.76e-1	7	6.36e-1	9	7.81e-1	ю	8.63e-1	4	8.80e-1
gmres-fdm post 2 f-1st kind-one sided	12	5.06e-1	6	6.24e-1	7	6.88e-1	5 6	6.59e-1	5 8.6	8.05e-1 1	1.8 3.1	52e-1	9 5.1	5.26e-1	7 5.7	i.75e-1 6	3 6.41	,41e-1	5 6.68e-1	1 11	5.80e-	8	7.19e-1	9	7.83e-1	ro	8.65e-1	22	1.06e + 0
gnres-fdm post 2 f-4th kind-two sided	10	4.19e-1	ıo	3.65e-1	4	4.25e-1	4 5	5.47e-1	4 6.6	6.68e-1 1	11 3.5	3.98e-1	6 3.2	1.59e-1	5 4.2	1.27e-1 4	4.54	.54e-1	4 5.54e-1	1 9	4.77e-1	2	4.73e-1	4	5.57e-1	4	7.20e-1	4	8.82e-1
gnres-fdm post 2 f-4th kind-one sided	10	4.20e-1	7	4.92e-1	7	6.87e-1	7 8	.84e-1	6 9.4	9.40e-1	11 8.1	.99e-1	7 4.1	.14e-1	7 5.7	.76e-1 7	7 7.30	.36e-1	7 8.96e-	1 9	4.77e-	1 2	6.36e-1		8.99e-1	9	1.01e+0	9	1.24e+(
gnres-fdm post v f-1st kind-two sided	80	3.12e-1	œ	4.83e-1	9	5.05e-1	10	5.46e-1	4 5.4	5.49e-1	9 3.1	3.17e-1	9 4.8	81e-1	7 5.1	5.10e-1 5	4.80	.80e-1	5 5.79e-1	1 7	3.34e-	7	5.33e-1	9	6.37e-1	4	5.76e-1	4	7.00e-1
gnres-fdm post v f-1st kind-one sided	12	4.71e-1	6	5.40e-1	7	5.79e-1	9 9	3.38e-1	5 6.6	6.60e-1 1	10 8.2	52e-1	10 5.2	.34e-1	7 5.1	.11e-1 6	3.60	.60e-1	6 6.77e-	.1 12	5.75e-	1 9	6.73e-1		7.31e-1	ю	6.99e-1	20	8.45e-1
gmres-fdm post v f-4th kind-two sided	10	3.89e-1	2	3.16e-1	4	3.58e-1	4 4	1.52e-1	4 5.4	5.49e-1 1	11 3.8	.87e-1	6 3.4	29e-1	5 3.7	3.79e-1 5	1 478	78e-1	4 4.81e-1	1 9	4.25e-	1 2	3.96e-1	4	4.54e-1	4	5.77e-1	4	7.02e-1
gmres-fdm post v f-4th kind-one sided	10	3.90e-1	7	4.27e-1	7	5.81e-1	7	.31e-1	7 8.8	8.83e-1 1	11 3.5	.90e-1	8 4.5	1.31e-1	8 5.8	5.80e-1 8	3 7.28	.29e-1	8 8.79e-1	1 9	4.25e-1	1 4	5.33e-1	7	7.32e-1	9	8.14e-1	7	1.14e+

Table 11: Kershaw mesh ($\epsilon=0.7,\,p=4$)

k = 1				bisect								go-to-one	-one				_				dex	decrease-by-one	one			
ΙI		k = 2	_	k = 3	k = 4	_	k = 5	×	k = 1	<u>~</u>	k = 2	k = 3	- 3	=	= 4	k = 5	_	k = 1	_	k = 2	_	k = 3	_	k = 4	_	k = 5
	i# [s];	<i>i t</i> [s]	<i>i#</i>	t [s]]# i#	t[s] #i	[8]	·#-	[s]	<i>i#</i>	t[s]	i#	t[s] 1	<i>i#</i>	t[s]	#: t	t[s] #i	6i t[s]	# [s	i t[s]	#	<i>i t</i> [s]	i#	[s]	i#	t[s]
45	1.12e+0 25	5 9.16e-1	1 19	9.26e-1	16 9.70	9.70e-1 14	1.02e+0	84	1.80e+0	46	1.42e+0	34 1.	:39e+0	28 1.	.45e+0	25 1.5	.51e+0 3	38 1.14	14e+0 21	9.44e-1	e-1 15	5 8.97c-	e-1 13	9.79e-1	11	9.83e-1
cg-diagonal-4th kind-two sided 55 1.366	1.36e+0 31	1.14e+(-0	1.07e+0	17 1.08	3e+0 15	1.09e+0	101	2.17e+0	28	1.80e+0	41 1.	: 0+e29:	32 1.	.62e+0	26 1.5	57e+0 46	1	.38e+0 26	3 1.17e+0	9+0 19	9 1.16e+C	+0 14	1.05e+C	0 12	1.09e+
sided 25	7.32e-1 14	4 6.42e-]	11	6.84e-1	10 7.8	.84e-1 9	8.47e-1	40	1.02e+0	22	8.59e-1	17 8	3.96e-1	14 9	.21e-1	12 9.4	.43e-1 2	22 7.84e-1	l-1	3 7.38e-	e-1 10	0 7.78e-1	9 1-	8.84e-1	∞	9.47e-1
cg-fdm_symm_1_f-4th_kind-two_sided 30 8.81	8.81e-1 18	8 8.28e-1	1 13	8.11e-1	10 7.8	7.84e-1 10	9.53e-1	48	1.22e+0	58	1.10e+0	20 1.	0+e90	16 1.	0+e90	13 1.0	03e+0 27	6	.66e-1 16	3 9.13e-1	e-1 12	2 9.41e-1	71 10	9.94e-1	6	1.08e+(
cg-fdm_symm_2_f-1st_kind-two_sided 25 1.016	1.01e+0 14	4 9.47e-1	11	1.04e+0	10 1.22	6 0+e	1.34e + 0	8	1.14e+0	18	1.02e+0	14 1	.11e+0	12 1.	.22e+0	11 1.3	Se+0 2	22 1.13	e+0 13	3 1.13e+0	3+0 16	0 - 1.23e + 0	6 0+	1.44e+0	8 0	1.56e+0
cg-fdm_symm_2_f-4th_kind-two_sided 30 1.22	2e+0 18	8 1.22e+(-0	1.24e+0	11 1.35	.35e+0 9	1.34e + 0	39	1.35e+0	23	1.31e+0	16 1	.27e+0	13 1.	.32e+0	11 1.3	36e+0 26	1	.34e+0 16	3 1.40e+0	3+0 12	2 1.48e+0	+0 10	1.60e+0	8 0	1.56e+
cg-fdm_symm_v_f-1st_kind-two_sided 21 7.91	7.91e-1 IS	3 7.72e-i	11 11	8.88e-1	10 1.02	6 0+e	1.10e + 0	53	9.73e-1	17	8.90e-1	14 5	.93e-1	12 1.	.07e+0	11 1.1	18e+0 1	18 8.30	8.30e-1 12	8.88e-	e-1	0 - 1.01e + 0	6 0+	1.16e+0	8 0	1.24e+(
cg-fdm_symm_v_f-4th_kind-two_sided 25 9.43	9.43e-1 16	5 8.92e-	12	9.73e-1	10 1.02	.02e+0 9	1.10e + 0	32	1.18e+0	20	1.05e+0	15 1.	.07e+0	12 1.	0+e+0	11 1.1	18e+0 21	1 9.70e-1	e-1 13	3 9.63e-	e-1	1.12e+0	+0 10	1.30e+0	6 0	1.41e+(
gmres-fdm_post_1 f-1st_kind-two_sided 25 7.93	7.93e-1 14	4 6.56e-i	11 11	6.80e-1	10 7.7.	7.71e-1 9	8.35e-1	40	1.13e+0	23	9.39e-1	18 9	1.84e-1	13 8	, 46e-1	12 9.3	3.30e-1 23	3 8.77e-	e-1 12	6.91e-	e-1 10	0 7.76e-1	5-1 B	8.80e-1	×	9.52e-1
gmres-fdm_post_1 f-1st_kind-one_sided 26 8.24	8.24e-1 19	9 9.15e-1	1 14	8.70e-1	12 9.2	9.27e-1 11	1.02e+0	40	1.13e+0	53	9.37e-1	18 9	.85e-1	14 9	9.15e-1	13 1.0	01e+0 24	4 9.13e-	l1	8.70e-	e-1 17	2 9.31e-1	17	1.07e+0	0 10	1.18e+
gmres-fdm_post_1_f-4th_kind-two_sided 29 9.28	9.28e-1 20	0 9.58e-1	1 13	8.04e-1	1.0 7.7	7.73e-1 9	8.37e-1	46	1.33e+0	58	1.14e+0	20 1.	0+e+0	15 9	9.80e-1	12 9.3	9.31e-1 26	6 9.91e-1	e-1 15	8.68e-	e-1 1:	1 8.53e-1	5-1 B	8.81e-1	×	9.53e-1
gmres-fdm_post_1 f-4th_kind-one_sided 28 8.93e-	3e-1 1g	9 9.17e-1	_	8.72e-1	12 9.2	9.27e-1 10	9.36e-1	43	1.22e+0	24	9.78e-1	18 9	9.89e-1	14 9	9.16e-1	13 1.0	01e+0 25		0.51e-1 10	5 8.71e-1	e-1 12	2 9.32e-1	17	1.07e+0	0 10	1.19e+
gmres-fdm_post_2_f-1st_kind-two_sided 23 9.86	9.86e-1 12	2 8.29e-i	_	9.62e - 1	9 1.12	.12e+0 8	1.22e+0	87	1.04e+0	19	1.14e+0	13	.04e+0	11 1.	.13e+0	10 1.2	25e+0 22	2 1.19	3+0 12	1.06e+0	6 0+c	1.14e+0	8 0+	1.32e+0	2 0	1.43e+(
gmres-fdm_post_2_f-1st_kind-one_sided 25 1.076	1.07e+0 15	5 1.04e+(-0 12	1.15e+0	10 1.24	.24e+0 10	1.51e+0	88	1.04e+0	19	1.14e+0	13	.05e+0	12 1.	.23e+0	11 1.3	38e+0 2	23 1.24	.24e+0 14	1.24e+0	1 0+4	1.38e+0	+0 10	1.62e+0	6 0	1.80e+
gmres-fdm post 2 f-4th kind-two sided 26 1.116	.11e+0 16	5 1.04e+	0 11	1.06e+0	9 1.12	8 0+e	1.23e+0	34	1.28e+0	21	1.25e+0	14 1	.12e+0	11 1.	.13e+0	10 1.2	5e+0 25	-	34e+0 14	1.24e	3+0 1	1.37e+0	6 0+	1.46e+0	8 0	1.61e+(
gmres-fdm post 2 f-4th kind-one sided 25 1.076	1.07e+0 16	5 1.04e+	.0 12	1.15e+0	11 1.36	ie+0 9	1.37e + 0	31	1.18e+0	20	1.20e+0	14 1	.13e+0	13 1.	.33e+0	11 1.3	38e+0 2	4 1.29	3+0 1	1.25e	.25e+0 12	2 1.50e+C	+0 10	1.62e+0	6 0	1.80e+(
gmres-fdm_post_v_f-1st_kind-two_sided 24 9.58	9.58e-1 14	4 8.45e-1	1 12	9.75e-1	10 1.02	6 0+a	1.12e + 0	8	1.09e+0	20	1.10e+0	14 1	.01e+0	12 1.	0+e+0	1.1	9e+0 2	1 1.02	02e+0 12	8.98e-	e-1 10	0 - 1.04e + 0	6 0+	1.18e+0	8 -0	1.28e+0
gmres-fdm_post_v_f-1st_kind-one_sided 26 1.04	4e+0 26	0 - 1.24e + 0	0 14	1.13e+0	12 1.23	Se+0 11	1.36e+0	32	1.19e+0	21	1.15e+0	15 1.	0+980	14 1.	.27e+0	13 1.4	41e+0 24	Ξ	l6e+0 15	5 1.13e	1 0+2	2 1.23e	+0 11	1.43e+0	0 10	1.58e+(
gmres-fdm post v f-4th kind-two sided 27 1.086	1.08e+0 IS	5 9.10e-i	1 12	9.72e-1	10 1.02	6 0+a	1.12e+0	36	1.31e+0	22	1.20e+0	15 1.	.10e+0	12 1.	0+980	11	9e+0 2	23 1.116	1e+0 13	3 9.73e-1	e-1	1 1.13e	+0 10	1.30e+0	8 0	1.28e+(
gmres-fdm_post_v_f-4th_kind-one_sided 26 1.04	1.04e+0 19	9 1.18e+0	0 14	1.14e+0	13 1.32	2e+0 12	1.49e+0	34	1.25e+0	21	1.15e+0	18 1	.34e+0	15 1.	.35e+0	14 1.5	53e+0 2	23 1.116	le+0 15	_	.13e+0 13	3 1.33e+C	+0 12	1.56e+0		1.74e+(

Table 12: Kershaw mesh ($\epsilon=0.5,\,p=4$)

		-sc	0+e	0+e	.93e+0	e+0	e+0	e+0	0+e	.52e+0	.76e+0	.31e+0	.76e+0	.21e+0	.54e+0	e+0	.54e+0	75e+0	.33e+0	e+0	e+0	930+0
	k = 5	j	7 2.47	8 2.56	_	16 1.93	5 2.94	5 2.94	16 2.52	16 2.52	15 1.76	2	15 1.76	2	21	5 2.93	2	2	2	19 3.08	17 2.78	
	_	i#	_	0 28	0 16	_	0 15	0 15	_	_	_	0 19	_	0 18	0 13	0 15	0 13	0 14	0 15	_		06 0
	= 4	t[s]	2.27e+0	2.58e+0	1.69e + 0	1.89e + 0	2.55e+0	2.87e+	2.20e+0	2.34e+0	1.83e + 0	2.01e+0	1.92e+0	2.01e+0	2.24e+0	3.00e+0	3.00e+0	3.00e+0	2.55e+0	2.78e + 0	2.53e + 0	9.78e±0
	¥	<i>i#</i>	30	34	17	19	91	18	17	18	18	20	19	20	14	18	18	18	19	21	19	- 6
decrease-by-one	k = 3	t[s]	2.16e+0	2.59e+0	1.56e + 0	1.88e+0	2.34e + 0	2.85e+0	2.04e+0	2.25e+0	1.60e+0	1.75e+0	1.82e + 0	1.82e + 0	2.44e + 0	2.56e+0	2.68e+0	2.56e+0	2.21e+0	2.39e + 0	2.29e+0	9.300±0
decreas	-24	<i>i#</i>	36	43	20	24	19	23	20	22	20	22	23	23	19	20	21	20	21	23	22	93
	= 2	t[s]	2.20e+0	2.75e+0	1.55e+0	1.95e + 0	2.18e+0	2.81e+0	1.77e+0	2.16e+0	1.53e + 0	1.58e+0	1.92e+0	1.70e+0	2.08e+0	2.25e+0	2.42e+0	2.34e+0	1.90e+0	2.12e+0	2.12e+0	0.13e±0
	-24	;#	49	61	27	34	52	32	24	53	56	27	32	59	23	22	27	56	22	28	28	86
	= 1	t[s]	2.66e+0	3.23e+0	1.72e+0	2.12e+0	2.31e+0	2.83e+0	1.79e+0	2.11e+0	1.81e+0	1.87e+0	2.25e+0	2.08e+0	2.15e+0	2.43e+0	2.76e+0	2.77e+0	1.89e+0	2.19e+0	2.19e+0	0.14o±0
	-24	<i>i#</i>	68	108	48	23	45	55	39	46	46	48	28	54	40	45	21	21	39	45	45	44
	2	t[s]	3.48e+0	3.61e+0	2.24e+0	2.32e+0	2.73e+0	2.86e+0	2.50e+0	2.61e+0	2.05e+0	2.05e+0	2.21e+0	1.90e+0	2.44e+0	5.67e+0	2.56e+0	2.56e+0	2.44e+0	2.54e+0	2.44e+0	0.498.6
	-24	;#	28	09	88	53	73	83	83	24	56	56	88	24	19	21	20	20	22	83	22	96
	= 4	t[s]	3.33e+0	3.74e+0	5.06e+0	5.33e+0	5.55e+0	5.86e+0	5.24e+0	5.52e+0	0+966°1	1.92e+0	5.24e+0	0+998'I	5.20e+0	5.30e+0	5.39e+0	5.30e+0	5.28e+0	2.37e+0	2.37e+0	0.4664.0
	-24	i#	99	74	31	32	52	58	55	28	30	59	33	58	21	22	23	22	55	56	56	- 26
go-to-one	= 3	[s] <i>a</i>	3.21e+0	3.92e+0	5.02e+0	.38e+0	.30e+0	0+e40	13e+0	.43e+0	0+96°	95e+0	.32e+0	95e+0	12e+0	12e+0	.35e+0	.04e+0	20e+0	.33e+0	.39e+0	0.000
go-te	-24	i#	: 62	96	38	45	59	36	30	34	36	36	43	36	56	56	59	22	30	31	32	30
	= 2	t[s]	.34e+0	1.22e+0	0+e00"	7.26e+0	22e+0	.85e+0	99e+0	.47e+0	.04e+0	.03e+0	.63e+0	.23e+0	.04e+0	.05e+0	.49e+0	21e+0	25e+0	.30e+0	.47e+0	300+0
	4	1#1	108	136 4	51 2	65	39	20	38	47 2	49 2	49 2	63	54	34	34	42	37	41	42	45 2	49
	= 1	[s]	1.27e+0	.17e+0	5.40e+0	92e+0	.48e+0	0+e00	24e+0	0+989°	0+986"	.15e+0	1.05e+0	.79e+0	2.44e+0	.55e+0	.11e+0	.01e+0	0+909"	88e+0	.01e+0	0000
	4	·#	199 4	240 5	94 2	114 2	72 2	87 3	67 2	80 2	104 2	110	141 4	132 3	65 2	68	83 3	80 3	71 2	78 2	82 3	81
						_												œ.	-		_	_
_	- 2	t[s]	2.35e+0 1	3.48e+0	1.73e+0	1.73e + 0	5.40e+0	5.55e+0	2.24e+0	5.24e+0	1.75e+0	1.92e+0 1	1.83e+0	1.92e+0	5.10e+0	5.81e+0	2.24e+0	2.25e+0 8	_	5.56e+0	2.42e + 0	0.780+0
	k = 5	#i t[s]	_	33 2.42e+0	18 1.73e+0	18 1.73e+0	16 2.40e+0	17 2.55e+0	18 2.24e+0	18 2.24e+0	18 1.75e+0	_	19 1.83e+0	20 1.92e+0	14 2.10e+0	18 2.81e+0	15 2.24e+0	_	19 2.43e+0 7	20 2.56e+0	19 2.42e+0	92 9.780±0
	- F		2.35e+0	38	_	_		14	•		_	1.92e+0	_	_	2	2	•	2.25e+0	2.43e+0	•		. 66
	k = 4 $k = 5$	t[s] #:	2.19e+0 32 2.35e+0	-	_	18 1	91	•	•	18	18 1	20 1.92e+0	1 19 1	20 1	14 2	18 2	12	2.25e+0	19 2.43e+0	•		
lect	k = 4 k	·#	2.19e+0 32 2.35e+0	40 2.44e+0 33	1.59e+0 18 1	1.75e+0 18 1	2.33e+0 16	2.58e+0 17	1.95e+0 18	21 2.17e+0 18 :	1.60e+0 18 1	1.67e+0 20 1.92e+0	1.75e+0 19 1	1.75e+0 20 1	2.30e+0 14 2	2.42e+0 18 2	2.41e+0 15	2.41e+0 15 2.25e+0	2.21e+0 19 2.43e+0	23 2.42e+0 20 :	21 2.20e+0 19	94 9.59a±0 99
bisect	- F	i# [s] #	2.19e+0 32 2.35e+0	2.44e+0 33	1.59e+0 18 1	22 1.75e+0 18 1	2.33e+0 16	21 2.58e+0 17	19 1.95e+0 18	2.17e+0 18	20 1.60e+0 18 1	21 1.67e+0 20 1.92e+0	1.75e+0 19 1	1.52e+0 22 1.75e+0 20 1	1.98e+0 18 2.30e+0 14 2	2.16e+0 19 2.42e+0 18 2	19 2.41e+0 15 ;	19 2.41e+0 15 2.25e+0	21 2.21e+0 19 2.43e+0	2.42e+0 20	2.20e+0 19	9.55e±0 99
bisect	k = 3 $k = 4$ k	$t[\mathbf{s}]$ #i $t[\mathbf{s}]$ #i	43 2.08e+0 36 2.19e+0 32 2.35e+0	52 2.54e+0 40 2.44e+0 88	23 1.44e+0 20 1.59e+0 18 1	97 1.70e+0 22 1.75e+0 18 1	2.10e+0 19 2.33e+0 16 5	26 2.49e+0 21 2.58e+0 17 :	22 1.78e+0 19 1.95e+0 18	25 2.04e+0 21 2.17e+0 18 :	1.46e+0 20 1.60e+0 18 1	21 1.67e+0 20 1.92e+0	1.75e+0 19 1	1.52e+0 22 1.75e+0 20 1	1.98e+0 18 2.30e+0 14 2	2.16e+0 19 2.42e+0 18 2	2.15e+0 19 2.41e+0 15 ;	22 2.16e+0 19 2.41e+0 15 2.25e+0	24 1.99e+0 21 2.21e+0 19 2.43e+0	26 2.15e+0 23 2.42e+0 20 3	1 25 2.07e+0 21 2.20e+0 19	96 9 150±0 94 9 590±0 99
bisect	k = 3 $k = 4$ k	t[8] #i $t[8]$ #i $t[8]$ #i	43 2.08e+0 36 2.19e+0 32 2.35e+0	2.54e+0 40 2.44e+0 88	1.44e+0 20 1.59e+0 18 1	1.70e+0 22 1.75e+0 18 1	22 2.10e+0 19 2.33e+0 16 3	2.49e+0 21 2.58e+0 17	1.78e+0 19 1.95e+0 18	2.04e+0 21 2.17e+0 18 :	23 1.46e+0 20 1.60e+0 18 1	24 1.52e+0 21 1.67e+0 20 1.92e+0	26 1.64e+0 22 1.75e+0 19 1	24 1.52e+0 22 1.75e+0 20 1	20 1.98e+0 18 2.30e+0 14 2	22 2.16e+0 19 2.42e+0 18 2	2.15e+0 19 2.41e+0 15 ;	2.16e+0 19 2.41e+0 15 2.25e+0	1.99e+0 21 2.21e+0 19 2.43e+0	2.15e+0 23 2.42e+0 20 :	2.07e+0 21 2.20e+0 19	9 06c+0 96 9 15c+0 94 9 59c+0 99
bisect	k = 3 $k = 4$ k	#i t[s] #i t[s] #i t[s] #i	43 2.08e+0 36 2.19e+0 32 2.35e+0	73 2.68e+0 52 2.54e+0 40 2.44e+0 33	30 1.39e + 0 $23 1.44e + 0$ $20 1.59e + 0$ $18 1$	38 1.76e+0 27 1.70e+0 22 1.75e+0 18 1	22 2.10e+0 19 2.33e+0 16 2	36 245e+0 26 2.49e+0 21 2.58e+0 17 :	28 1.67e+0 22 1.78e+0 19 1.95e+0 18	34 204e+0 25 2.04e+0 21 2.17e+0 18	29 1.39e+0 23 1.46e+0 20 1.60e+0 18 1	29 1.39e+0 24 1.52e+0 21 1.67e+0 20 1.92e+0	36 1.73e+0 26 1.64e+0 22 1.75e+0 19 1	32 1.56e+0 24 1.52e+0 22 1.75e+0 20 1	25 1.76e+0 20 1.98e+0 18 2.30e+0 14 2	27 1.90e+0 22 2.16e+0 19 2.42e+0 18 2	30 2.10e+0 22 2.15e+0 19 2.41e+0 15 ;	29 2.03e+0 22 2.16e+0 19 2.41e+0 15 2.25e+0	30 1.85e+0 24 1.99e+0 21 2.21e+0 19 2.43e+0	32 2.01e+0 26 2.15e+0 23 2.42e+0 20 :	34 2.12e+0 25 2.07e+0 21 2.20e+0 19	88 9.06+0 96 9.150+0 94 9.59+0 99
bisect	k = 3 $k = 4$ k	#i t[s] #i t[s] #i t[s] #i	2.19e+0 32 2.35e+0	52 2.54e+0 40 2.44e+0 88	23 1.44e+0 20 1.59e+0 18 1	97 1.70e+0 22 1.75e+0 18 1	22 2.10e+0 19 2.33e+0 16 2	26 2.49e+0 21 2.58e+0 17 :	22 1.78e+0 19 1.95e+0 18	25 2.04e+0 21 2.17e+0 18 :	23 1.46e+0 20 1.60e+0 18 1	24 1.52e+0 21 1.67e+0 20 1.92e+0	26 1.64e+0 22 1.75e+0 19 1	24 1.52e+0 22 1.75e+0 20 1	20 1.98e+0 18 2.30e+0 14 2	22 2.16e+0 19 2.42e+0 18 2	2.15e+0 19 2.41e+0 15 ;	22 2.16e+0 19 2.41e+0 15 2.25e+0	24 1.99e+0 21 2.21e+0 19 2.43e+0	32 2.01e+0 26 2.15e+0 23 2.42e+0 20 :	1 25 2.07e+0 21 2.20e+0 19	9 06c+0 96 9 15c+0 94 9 59c+0 99
bisect	k = 4 k	t[8] #i $t[8]$ #i $t[8]$ #i	43 2.08e+0 36 2.19e+0 32 2.35e+0	131 3.25e+0 73 2.68e+0 52 2.54e+0 40 2.44e+0 33	55 $1.62e+0$ 30 $1.39e+0$ 23 $1.44e+0$ 20 $1.59e+0$ 18 1	66 1.95e+0 38 1.76e+0 27 1.70e+0 22 1.75e+0 18 1	52 2.11e+0 29 1.97e+0 22 2.10e+0 19 2.33e+0 16 3	63 2.56e+0 36 2.45e+0 26 2.49e+0 21 2.58e+0 17	47 1.77e+0 28 1.67e+0 22 1.78e+0 19 1.95e+0 18	56 2.11e+0 34 2.04e+0 25 2.04e+0 21 2.17e+0 18	1 53 1.71e+0 29 1.39e+0 23 1.46e+0 20 1.60e+0 18 1	55 1.77e+0 29 1.39e+0 24 1.52e+0 21 1.67e+0 20 1.92e+0	68 2.20e+0 36 1.73e+0 26 1.64e+0 22 1.75e+0 19 1	65 2.11e+0 32 1.56e+0 24 1.52e+0 22 1.75e+0 20 1	45 1.95e+0 25 1.76e+0 20 1.98e+0 18 2.30e+0 14 2	53 2.30e+0 27 1.90e+0 22 2.16e+0 19 2.42e+0 18 2	57 2,47e+0 30 2,10e+0 22 2,15e+0 19 2,41e+0 15	56 2.43e+0 29 2.03e+0 22 2.16e+0 19 2.41e+0 15 2.25e+0	49 2.00e+0 30 1.85e+0 24 1.99e+0 21 2.21e+0 19 2.43e+0	55 2.22e+0 $ 32 2.01e+0 26 2.15e+0 23 2.42e+0 20$	57 2.31e+0 34 2.12e+0 25 2.07e+0 21 2.20e+0 19	57 931e+0 88 9.06e+0 96 9.15e+0 94 9.59e+0 99
bisect	k = 3 $k = 4$ k	#i t[s] #i t[s] #i t[s] #i	107 2.65e+0 59 2.16e+0 43 2.08e+0 36 2.19e+0 32 2.35e+0	131 3.25e+0 73 2.68e+0 52 2.54e+0 40 2.44e+0 33	sided 55 $1.62e+0$ 30 $1.39e+0$ 23 $1.44e+0$ 20 $1.59e+0$ 18 1	66 1.95e+0 38 1.76e+0 27 1.70e+0 22 1.75e+0 18 1	52 2.11e+0 29 1.97e+0 22 2.10e+0 19 2.33e+0 16 3	63 2.56e+0 36 2.45e+0 26 2.49e+0 21 2.58e+0 17	47 1.77e+0 28 1.67e+0 22 1.78e+0 19 1.95e+0 18	56 2.11e+0 34 2.04e+0 25 2.04e+0 21 2.17e+0 18	1 53 1.71e+0 29 1.39e+0 23 1.46e+0 20 1.60e+0 18 1	55 1.77e+0 29 1.39e+0 24 1.52e+0 21 1.67e+0 20 1.92e+0	68 2.20e+0 36 1.73e+0 26 1.64e+0 22 1.75e+0 19 1	65 2.11e+0 32 1.56e+0 24 1.52e+0 22 1.75e+0 20 1	45 1.95e+0 25 1.76e+0 20 1.98e+0 18 2.30e+0 14 2	53 2.30e+0 27 1.90e+0 22 2.16e+0 19 2.42e+0 18 2	57 2,47e+0 30 2,10e+0 22 2,15e+0 19 2,41e+0 15	56 2.43e+0 29 2.03e+0 22 2.16e+0 19 2.41e+0 15 2.25e+0	49 2.00e+0 30 1.85e+0 24 1.99e+0 21 2.21e+0 19 2.43e+0	55 2.22e+0 $ 32 2.01e+0 26 2.15e+0 23 2.42e+0 20$	57 2.31e+0 34 2.12e+0 25 2.07e+0 21 2.20e+0 19	57 931e+0 88 9.06e+0 96 9.15e+0 94 9.59e+0 99
bisect	k = 3 $k = 4$ k	#i t[s] #i t[s] #i t[s] #i	107 2.65e+0 59 2.16e+0 43 2.08e+0 36 2.19e+0 32 2.35e+0	131 3.25e+0 73 2.68e+0 52 2.54e+0 40 2.44e+0 33	sided 55 $1.62e+0$ 30 $1.39e+0$ 23 $1.44e+0$ 20 $1.59e+0$ 18 1	66 1.95e+0 38 1.76e+0 27 1.70e+0 22 1.75e+0 18 1	52 2.11e+0 29 1.97e+0 22 2.10e+0 19 2.33e+0 16 3	63 2.56e+0 36 2.45e+0 26 2.49e+0 21 2.58e+0 17	47 1.77e+0 28 1.67e+0 22 1.78e+0 19 1.95e+0 18	56 2.11e+0 34 2.04e+0 25 2.04e+0 21 2.17e+0 18	1 53 1.71e+0 29 1.39e+0 23 1.46e+0 20 1.60e+0 18 1	55 1.77e+0 29 1.39e+0 24 1.52e+0 21 1.67e+0 20 1.92e+0	68 2.20e+0 36 1.73e+0 26 1.64e+0 22 1.75e+0 19 1	65 2.11e+0 32 1.56e+0 24 1.52e+0 22 1.75e+0 20 1	45 1.95e+0 25 1.76e+0 20 1.98e+0 18 2.30e+0 14 2	53 2.30e+0 27 1.90e+0 22 2.16e+0 19 2.42e+0 18 2	57 2,47e+0 30 2,10e+0 22 2,15e+0 19 2,41e+0 15	56 2.43e+0 29 2.03e+0 22 2.16e+0 19 2.41e+0 15 2.25e+0	49 2.00e+0 30 1.85e+0 24 1.99e+0 21 2.21e+0 19 2.43e+0	55 2.22e+0 $ 32 2.01e+0 26 2.15e+0 23 2.42e+0 20$	57 2.31e+0 34 2.12e+0 25 2.07e+0 21 2.20e+0 19	57 931e+0 88 9.06e+0 96 9.15e+0 94 9.59e+0 99
bisect	k = 3 $k = 4$ k	#i t[s] #i t[s] #i t[s] #i	107 2.65e+0 59 2.16e+0 43 2.08e+0 36 2.19e+0 32 2.35e+0	131 3.25e+0 73 2.68e+0 52 2.54e+0 40 2.44e+0 33	sided 55 $1.62e+0$ 30 $1.39e+0$ 23 $1.44e+0$ 20 $1.59e+0$ 18 1	1 66 1.95e+0 38 1.76e+0 27 1.70e+0 22 1.75e+0 18 1	52 2.11e+0 29 1.97e+0 22 2.10e+0 19 2.33e+0 16 3	63 2.56e+0 36 2.45e+0 26 2.49e+0 21 2.58e+0 17	47 1.77e+0 28 1.67e+0 22 1.78e+0 19 1.95e+0 18	56 2.11e+0 84 2.04e+0 25 2.04e+0 21 2.17e+0 18	1 53 1.71e+0 29 1.39e+0 23 1.46e+0 20 1.60e+0 18 1	55 1.77e+0 29 1.39e+0 24 1.52e+0 21 1.67e+0 20 1.92e+0	36 1.73e+0 26 1.64e+0 22 1.75e+0 19 1	32 1.56e+0 24 1.52e+0 22 1.75e+0 20 1	25 1.76e+0 20 1.98e+0 18 2.30e+0 14 2	53 2.30e+0 27 1.90e+0 22 2.16e+0 19 2.42e+0 18 2	57 2,47e+0 30 2,10e+0 22 2,15e+0 19 2,41e+0 15	56 2.43e+0 29 2.03e+0 22 2.16e+0 19 2.41e+0 15 2.25e+0	30 1.85e+0 24 1.99e+0 21 2.21e+0 19 2.43e+0	55 2.22e+0 $ 32 2.01e+0 26 2.15e+0 23 2.42e+0 20$	34 2.12e+0 25 2.07e+0 21 2.20e+0 19	57 9.31e+0 33 9.05e+0 96 9.15e+0 94 9.59e+0 99

Table 13: Kershaw mesh ($\epsilon=0.3,\,p=4$)

					bisect				_					go-to-one	Jie Jie				_				deci	decrease-by-one	e			
	k = 1	k = 1 $k = 2$	k = 2	_	k = 3	_	k = 4	<i>k</i>	22	k =	= 1	k:	= 2	k = 3	_	k = 4	_	k = 5	_	k = 1	_	k = 2	_	k = 3	_	:=4	-	= 2
	#i t[t[s] #i	<i>i t</i> [s]	1#	[s] t	1#	[s] <i>a</i>	i#	t[s]	<i>i#</i>	t[s]	<i>i</i> #	t[s]	#i t	t[s] #i		t[s] ≠	#i t[s]	1#	t[s]	#	[8]	1#	t[s]	?# 	[s] <i>q</i>	i#	t[s]
cg-diagonal-1st_kind-two_sided	190 4.51e+0	e+0 10	3 3.56e+0	54 U+0	3.41e+	+0 62	3.50e+0	22	3.72e+0	353 7.	.33e+0	190 5	5.59e+0	140 5.37	5.37e+0 11	116 5.49	$.49e+0 \mid 10$	102 5.75	5.75e+0 154	4.40e+0	0 84	3.57e + 0	_	3.51e+0	_	3.59e+0	45	3.82e + 0
cg-diagonal-4th_kind-two_sided	231 5.50e+0	le+0 12:	9 4.48e+0	06 0±	4.11e+0	F0 70	3.97e+0	22	3.86e+0	429 8.	8.92e+0	238 7	7.05e+0	168 6.48	6.48e+0 13	130 6.18	18e+0 10	106 6.00e+0	3+0 187	5.36e+0	0 105	4.48e+	+0 74	4.20e+0	22	4.03e+0	47	3.99e + 0
cg-fdm_symm_1_f-1st_kind-two_sided	96 2.75	2.75e+0 51	1 2.27	38	2.29e+	F0 32	2.42e+0	58	2.56e+0	168 4.	.17e+0	88	3.32e+0	65 3.29	.29e+0 54		3.42e+0 4	48 3.66e+0	9+0 84	2.92e+0	0 45	2.48e + 0	-0 34	2.56e+0	28	2.66e + 0	52	2.88e + 0
cg-fdm_symm_1_f-4th_kind-two_sided	116 3.31	3.31e+0 65	5 2.89e + 0	3+0 46	2.77e+0	98 0⊣	9.72e+0	30	2.73e+0	204 5.	0+e90	113	4.27e+0	79 4.00	.00e+0 61		1.87e+0 5	50 3.82e+0	+0 102	3.55e+C	0 57	3.15e+0	-0 40	3.01e+0	32	3.06e + 0	56	3.00e + 0
cg-fdm symm 2 f-1st kind-two sided	89 3.53	3.53e+0 47	7 3.11e+6	98 0+2	3.34e+	F0 30	3.58e+0	27	3.94e+0	124 4.	.18e+0	99	3.66e+0	49 3.78	78e+0 4	1 4.00	3e+0 :	36 4.35	77 0+	3.87e+(0 41	3.51e + 0	-0 31	3.74e+0	97	4.05e+0	23	4.39e+0
cg-fdm symm 2 f-4th kind-two sided	107 4.26	4.26e+0 60	0 3.98e+C	2+0 43	4.00e+0	F0 34	4.06e+0	58	4.09e+0	150 5.	0+e90	84	4.66e+0	59 4.56	.56e+0 4	46 4.56	.56e+0 3	38 4.59	59e+0 93	4.67e+0	0 53	4.54e + 0	-0 37	4.47e+0	53	4.52e+0	24	4.59e+0
cg-fdm symm v f-1st kind-two sided	85 3.16	3.10e+0 45	9 2.82e+0	37	2.90e+0	F0 32	3.17e+0	53	3.49e+0	126 4.	.10e+0	20	3.55e+0	53 3.65	.65e+0 4	4 3.8.	3e+0	40 4.21	21e+0 70	3.12e+(0 41	2.94e + 0	-0 33	3.27e+0	28	3.53e+0	56	3.98e + 0
cg-fdm_symm_v_f-4th_kind-two_sided	100 3.66e+0	3e+0 60	0 - 3.47e + 0	0+t	3.38€+	+0 35	3.47e+0	30	3.61e+0	150 4.	.88e+0	87 4	4.42e+0	62 4.28	.28e+0 4	49 4.27	7e+0	41 4.316	.31e+0 82	3.66e+0	0 20	3.60e+0	-0 37	3.67e+0	30	3.78e + 0	56	3.98e + 0
gmres-fdm post 1 f-1st kind-two sided	102 3.23e+0	3e+0 48	8 2.26e+C	3e 0+3	2.23e+	+0 30	2.28e+0	27	2.45e+0	218 6.	.14e+0	92	3.75e+0	64 3.40	.40e+0 5	52 3.38	se+0	44 3.38e+	06 0+6	3.42e+0	0 42	2.41e + 0	-0 32	2.51e+0	27	2.59e+0	24	2.78e + 0
gmres-fdm post 1 f-1st kind-one sided	112 3.54e+0	le+0 51	1 2.38e+0	33 o+c	2.28e-	+0 31	2.42e+0	28	2.53e+0	224 6.	.32e+0	102 4	4.13e+0	68 3.58	3.58e+0 54		3.50e+0 4	46 3.60e+0	06 0+6	3.41e+C	0 44	2.52e + 0	93	2.57e+0	28	2.68e+0	56	2.99e + 0
gmres-fdm_post_l_f-4th_kind-two_sided	141 4.48	4.48e+0 64	4 3.01e+C	0+0 43	2.64e+0	+0 34	2.63e+0	88	2.54e+0	282 7.	.99e+0	133 5	5.40e+0	81 4.29	.29e+0 5	59 3.84	3.84e+0 4	47 3.68e+0	40 11E	4.37e+0	0 22	3.16e + 0	-0 38	2.92e+0	53	2.77e+0	22	2.88e + 0
gmres-fdm post 1 f-4th kind-one sided	137 4.36	4.36e+0 57	7 2.65e+0	37	2.29e+0	+0 30	9.28e+0	56	2.36e+0	241 6.	.84e+0	111	4.50e+0	69 3.64	3.64e+0 49	e	.21e+0 3	39 3.01e+0	0+0 10¢	4.05e+C	0 49	2.83e + 0	-0 34	2.64e + 0	27	2.58e+0	24	2.78e + 0
gmres-fdm post 2 f-1st kind-two sided	86 3.67	3.67e+0 46	9 2.77e	.77e+0 30	2.86e+0	F0 25	3.05e+0	22	3.29e+0	133 4.	.92e+0	28	3.39e+0	42 3.3	3.37e+0 35		3.60e+0 3	30 3.69	.69e+0 77	4.15e+C	98	3.21e + 0	-0 26	3.23e+0	23	3.69e + 0	21	4.15e+0
gmres-fdm post 2 f-1st kind-one sided	101 4.33	4.33e+0 45	8 2.97	:97e+0 33	3.20e+0	F0 27	3.29e+0	24	3.57e+0	133 4.	.95e+0	90	3.53e+0	43 3.45	.45e+0 3	36 3.71	3.71e+0 3	31 3.92e + 0	68 0+	4.78e+0	0 39	3.47e + 0	-0 29	3.60e+0	22	4.01e+0	22	4.34e+0
gmres-fdm post 2 f-4th kind-two sided	114 4.87	L.87e+0 52	2 3.60e+C	35	3.38e+0	F0 27	3.29e+0	23	3.44e+0	173 6.	.43e+0	77 4	4.54e+0	50 4.05	.05e+0 3	39 3.95	: 06+0 3	31 3.92	.92e+0 102	5.44e+C	0 46	4.15e+0	-0 32	4.06e+0	22	4.00e+0	21	4.17e+0
gmres-fdm post 2 f-4th kind-one sided	106 4.58	L58e+0 50	0 3.49e + 0	38	8.12e+0	+0 26	3.17e+0	23	3.44e+0	157 5.	.83e+0	69	4.07e+0	42 3.38	.38e+0 34		3.52e+0 2	28 3.476	.47e+0 95	5.11e+0	0 43	3.82e + 0	-0 29	3.59e+0	24	3.87e + 0	21	4.17e+0
gmres-fdm post v f-1st kind-two sided	110 4.38	4.38e+0 52	95	.16e+0 40	3.25e+0	F0 34	3.50e+0	50	3.55e+0	157 5.	0+e99	73	3.99e+0	53 3.83	.83e+0 4	43 3.88	:88e+0 3	38 4.17e	64 0±	3.81e+(0 42	3.16e+0	-0 32	3.34e+0	28	3.59e + 0	52	3.91e+0
gnres-fdm post v f-1st kind-one sided	115 4.60e+0	he+0 58	9 3.57e+0	2+0 +t	3.41e-	+0 36	3.67e+0	31	3.88e+0	185 6.	.72e+0	95	5.17e+0	57 4.10	10e+0 45	7	.04e+0 4	40 4.31c	3le+0 104	5.00e+0	0 20	3.78e+	+0 36	3.70e+0	30	3.86e + 0	27	4.20e+0
gmres-fdm post v f-4th kind-two sided	133 5.31	5.31e+0 64	4 3.90e+C	3+0 44	3.57e+0	F0 35	3.59e+0	68	3.53e+0	209 7.	.57e+0	95	5.16e+0	61 4.48	45e+0 4	45 4.07	7e+0	39 4.22	22e+0 106	5.14e+C	0 20	3.79e + 0	-0 37	3.80e+0	53	3.72e+0	52	3.91e+0
gmres-fdm post v f-4th kind-one sided 123		4.93e+0 60	0 - 3.63e + 0	77 0±0	3.56e+(+0 36	3.68e+0	83	4.10e+0	195 7.	.11e+0	97	5.28e+0	59 4.25	.25e+0 45	4	.05e+0 4	11 4.44	.44e+0 88	4.25e+0	0 23	3.99e+0	-0 37	3.83e+0	30	3.86e + 0	27	4.21e+0
																										١		

Table 14: Kershaw mesh ($\epsilon=0.3,\,p=7$)

k = 5	,	t[s]	2.31e+0	2.42e+0	1.61e+0	1.69e + 0	2.36e+0	2.51e+0	3.15e+0	3.16e + 0	1.67e + 0	1.73e+0	1.74e+0	1.59e+0	2.00e+0	2.12e+0	2.00e+0	1.99e + 0	3.38e+0	3.74e+0	3.52e+0	3.38e+0
4	- 1	# i	42	44	21	22	17	18	20	20	21	22	22	20	14	15	14	14	20	22	21	20
k = 4		t[s]	2.22e+0	5.50e+0	1.53e+0	1.72e+0	5.16e+0	5.51e+0	5.83e+0	3.09e+0	1.52e+0	1.62e+0	1.65e+0	1.51e+0	5.19e+0	5.28e+0	5.29e+0	5.28e+0	3.02e+0	3.38e+0	3.30e+0	3.13e+0
4		# <i>i</i>	48 2	54 2	24 1	27 1	19 2	22 2	22 2	24 3	23 1	25 1	25 1	23 1	18 2	19 2	19 2	19 2	22 3	24 3	24 3	23 3
-by-one	,	t[s]	.25e+0	.59e+0	.47e+0	.73e+0	.04e+0	.39e+0	.70e+0	.10e+0	.43e+0	45e+0	.73e+0	.51e+0	.87e+0	.94e+0	.14e+0	.03e+0	.73e+0	0+96°	.34e+0	.05e+0
decrease-by-one $k = 3$		#i	59 2	69	29 1	34 1	23 2	27 2	27 2	31 3	27 1	88	32 1	29 1	20 1	21 1	23 2	22 2	26 2	28 2	31 3	29 3
k = 2		t s	.33e+0	.85e+0	.47e+0	.85e+0	.89e+0	5.46e+0	2.40e+0	.04e+0	.45e+0	.46e+0	80e+0	57e+0	.65e+0	.77e+0	15e+0	0+a68"	.65e+0	0+988°	.39e+0	.05e+0
4	- 1	#;	81	66	39	49	30	39	34	43	36	37	45	40	25	27	32	29	35	38	44	41
_		t[s]	2.88e+0	.53e+0	.72e+0	0+a6	0+a6	.54e+0	5.55e+0	3.05e+0	.87e+0	.87e+0	.35e+0	17e+0	0+e96	10e+0	.56e+0	.37e+0	45e+0	.97e+0	49e+0	.88e+0
k = 1		#:		177 3.5	7.1 1.7	86 2.0	56 2.0	68 2.5	62 2.5	74 3.0	70 1.8	71 1.8	88 2.3	82 2.1	49 1.9	53 2.1	64 2.5	60 2.3	75 3.4	84 3.9	96 4.4	87 3.8
	- -	t[s]	3.97e+0 1	e+0 1	.00e+0	0+a	.83e+0	0+e96	.37e+0	.53e+0	.85e+0	04e+0	05e+0	45e+0	49e+0	26e+0	25e+0	- e+0	. 0+a	20e+0	27e+0	3.97e+0
49	2	#i t		174 4.16	2	80 2.7.	47 2.8	49 2.9	57 4.3	4	2	ಌ	ಣ	65 2.45	39 2.4	40 2.50	40 2.5	35 2.20	50 4.13	55 4.50	52 4.2	48 3.97
= 4	- -	t[s]	3.88e+0	39e+0	2.53e+0	84e+0	62e+0	03e+0	.08e+0	.59e+0	85e+0	.98e+0	.33e+0	0+e99	.32e+0	.48e+0	0+e99	.22e+0	0+986	.29e+0	0+999°	.53e+0
4	1	#	190 3.	215 4.	88 2.	99 2.	53 2.	59 2.	65 4.	73 4.	90 2.	94 2.	105 3.	84 2.	44 2.	2	50 2.	42 2.	59 3.	63 4.	69 4.	67 4.
e e	- -	t[s]	3.94e+0	0+a	0+a	0+ə	0+a	0+a	0+e98"	.71e+0	.04e+0	.30e+0	08e+0	.35e+0	.27e+0	.36e+0	2.74e+0	0+e	0+a	0+a	0+a	.88e+0
go-to-one $k = 3$	1	#i t	231 3.94	281 4.79	07 - 2.49	29 3.00	34 2.46	78 3.03	79 3.86	96 4.71	16 3.04	26 3.30	55 4.08	28 3.35	54 2.27	56 2.36	55 2.74	56 2.35	33 4.41	90 4.78	90 5.68	11 4.88
_	- -	t[s] ±	1.31e+0 2	_	2.57e+0 1	21e+0 1	2.45e+0 (.07e+0	3.75e+0 7	.84e+0 9	.70e+0 1	.87e+0 1	01e+0 1	.15e+0 1	7.55e+0 1	.01e+0	.48e+0 (3.03e+0 E	.47e+0 8	3 0+997.	.99e+0 1	89e+0 6
k = 2		# 1	315 4.3	396 5.4	44 2.5	.80 3.2	87 2.4	109 3.0	107 3.7.	138 4.8	78 3.7	187 3.8	340 5.0	000 4.1	82 2.5	96 3.0	.12 3.4	97 3.0	15 4.4	48 5.7	6.9 08.	8'9 22
-	- -	t[s]	5.94e+0 3	e+0 3	.27e+0 1	e+0 1	0+e	42e+0 1	e+0 1	14e+0 1	_	_			.43e+0	.49e+0	e+0 1	.51e+0	_	_	_	_
k = 1	2			6 7.11		3 3.97	0 2.80	ಣ	2 4.27	rO.					~	4	9.20	4				
_	- -	# i	+0 573	989 0+	+0 266	+0 323	9+0 160	e+0 195	+0 202	+0 243	- 0+	- 0+	- 0+	- 0+	+0 169	+0 221	+0 27	+0 222	9	- 0+	- 0+	0+
4 = 2		t s	2.15e+0	2.25e	1.46e+0	1.54e	1.93	1.99	2.76e+0	2.85e	1.47e	1.61e	1.51e	1.42e	1.69e+0	1.83e+0	1.76e+0	1.69e+0	2.76e	3.06e	2.90e	2.59e
-	- -	#	r0 81	-0 85	-0 39	0-	-0 29	90	-0 34	-0 82	-0 36	-0 40	-0 -83	-0 82	-0 24	-0 26	r0 25	r0 24	r0 31	-0 35	-0 35	0-
k = 4		t[s]	2.13e-	2.41e+(1.39e+0	1.55e-	1.75e+(1.97e-	2.52e+0	2.87e+0	1.37e-	1.51e+0	1.61e+0	1.44e+0	1.57e+0	1.74e+0	1.68e-	1.62e-	2.53e-	2.93e+0	2.93e-	2.79e+0
_	- -	#	76 0	0 106	-0 44	0 49	0 32	98 0	0 38	0 43	0 40	0 44	0 46	0 42	0 27	30	0 59	0 88	0 35	0 41	0 41	0 39
bisect $k = 3$,	t [s]	2.17e+0	2.62e+	1.36e+	1.64e + 0	1.67e + 0	2.02e+0	2.39e+	2.87e + 0	1.43e+0	1.52e+0	1.76e + 0	1.52e+0	1.54e+0	1.67e+0	1.80e + 0	1.63e + 0	2.53e+0	3.04e+0	3.15e+0	3,15e+0
_	- -	#	_	139	23	64	33	47	9 40	- SI			19	_	88	98 (33	88	45	. 54	299	292
k = 2		¢[s]	2.37e+0	2.99e+0	1.41e+0	1.78e+0	1.62e+(2.05e+0	2.31e+(2.96e + 0	1.56e + 0	1.75e+0	2.18e+0	1.89e+0	1.53e+(1.68e + 0	1.97e + 0	1.87e+0	2.91e+0	3.49e+0	3.86e + 0	3.66e+0
_	- I.	#	158	199	7.5	91	25	99	69	42	20	78	97	82	45	49	28	22	71	85	93	88
k = 1		f[s]	286 3.21e+0	343 3.85e+0	1.81e+0	2.18e + 0	1.85e+0	2.26e+0	2.61e+0	3.16e + 0	2.69e+0	2.90e+0	3.37e+0	2.88e + 0	2.22e+0	2.42e+0	2.65e+0	2.74e + 0	4.80e+0	5.41e+0	7.35e+0	0+900.9
-46		# i	586	343	135	163	96	117	911	140	165	179	207	178	101	110	120	124	185	208	284	231
		_	kind-two_sided	cg-diagonal-4th_kind-two_sided	cg-fdm_symm_1_f-1st_kind-two_sided	cg-fdm_symm_1_f-4th_kind-two_sided	cg-fdm_symm_2_f-1st_kind-two_sided	cg-fdm symm 2 f-4th kind-two sided	cg-fdm symm v f-1st kind-two sided	cg-fdm.symm.v.f-4th.kind-two.sided	gmres-fdm post 1 f-1st kind-two sided	gmres-fdm post 1 f-1st kind-one sided	gmres-fdm post 1 f-4th kind-two sided	gmres-fdm post 1 f-4th kind-one sided	gnres-fdm post 2 f-1st kind-two sided	gmres-fdm post 2 f-1st kind-one sided	gnres-fdm post 2 f-4th kind-two sided	gmres-fdm post 2 f-4th kind-one sided	gmres-fdm post v f-1st kind-two sided	gmres-fdm post v f-1st kind-one sided	gmres-fdm post v f-4th kind-two sided	gmres-fdm post v f-4th kind-one sided
			cg-diagonal-1st kind-two sided	cg-diagonal-4th	cg-fdm symm 1	cg-fdm symm 1	cg-fdm symm 2	cg-fdm.symm.2	cg-fdm_symm_v.	cg-fdm-symm_v	gmres-fdm_post	gmres-fdm_post	gmres-fdm_post	gmres-fdm_post	gmres-fdm_post	gmres-fdm_post	gmres-fdm post	gmres-fdm post	gmres-fdm.post	gmres-fdm post	gmres-fdm post	emres-fdm post

3 3D ball

Table 15: 3D ball (p=4)

					bisect									go-tc	go-to-one									decrease-by-one	-by-one				
_	k = 1	_	k = 2	_	k = 3	_	k = 4		k = 5	, k	k = 1	4	= 2	* * * * * * * * * * * * * * * * * * *	= 3	k	= 4	k =	2 =	k =	- 1	k =	= 2	k = 3	~	k = 1	4	k = 5	.01
	#i t[s]	1#	; t[s]	i#	[s]	?# 	t[s]	i#	t[s]	1#	t[s]	<i>i#</i>	t[s]	1#	[s]	i#	t[s]	<i>i#</i>	t[s]	<i>i#</i>	[s]	<i>i#</i>	t[s]	1#	t[s]	1#1	t[s]	i#	t[s]
cg-diagonal-1st kind-two sided	9 2.89	2-1 7	3.15e-1	1 5	2.89e-1	*	2.81e-1	4	3.30e-1	17	4.95e-1	10	3.99e-1		3.55e-1	9	3.70e-1	5	3.62e-1	8	3.14e-1		3.97e-1	5 3	3.71e-1	4 3.	.66e-1	3 3	3.26e-1
cg-diagonal-4th kind-two sided	12 3.86	3-1-0	-9.69e-	2	2.87e-1	4	2.80e-1	4	3.29e-1	21	6.12e-1	12	4.78e-1	∞	4.06e-1	9	3.68e-1	22	3.61e-1	10	3.93e-1	9	3.41e-1	4 2	5.96e-1	3 2.	2.74e-1	3	3.27e-1
cg-fdm symm 1 f-1st kind-two sided	6 2.26	L-3	3.92e-1	1 5	3.71e-1	4	3.69e-1	4	4.40e-1	6	3.02e-1	œ	3.92e-1	20	3.23e-1	4	3.20e-1	4	3.82e-1	9	2.79e-1	7	5.00e-1	5 4	1.81e-1	4 4.	.83e-1	3 4	1.37e-1
cg-fdm_symm_1_f-4th_kind-two_sided	7 2.64e-1	1-1	2.25e-1	1.4	2.97e-1	es	2.77e-1	~	3.31e-1	10	3.36e-1	9	2.95e-1	10	3.24e-1	4	3.20e-1	4	3.82e-1	7	3.26e-1	4	2.87e-1	4 3	3.86e-1	3 3.	.63e-1	3 4	1.37e-1
gmres-fdm post 1 f-1st kind-two sided	6 2.60e-1	7 1-9	4.45e-1	1 2	4.37e-1	4	4.51e-1	4	5.41e-1	∞	3.08e-1	œ	4.46e-1	9	4.48e-1	4	3.92e-1	4	1.69e-1	2	2.73e-1	7	5.69e-1	5 5	5.71e-1	4 5.	5.94e-1	3 5	5.71e-1
gmres-fdm post 1 f-1st kind-one sided	11 4.69e	1.69e-1 9	5.61e-1	1 7	5.84e-1	ro	5.39e-1	20	6.46e-1	11	4.2%-1	6	4.96e-1	7	5.12e-1	9	5.52e-1	22	.63e-1	12	3.25e-1	8	3.38e-1	9 9	6.62e-1	5 7.	.09e-1	4	7.11e-1
gmres-fdm_post_1 f-4th kind-two_sided 7	7 3.00e-1	3-1 4	2.73e-1	1 4	3.62e-1	eo	3.60e-1	8	4.31e-1	10	3.86e-1	9	3.42e-1	4	3.17e-1	4	3.93e-1	4	1.69e-1	7	3.71e-1	4	3.50e-1	4 4	1.73e-1	3 4,	1.74e-1	3	5.70e-1
gmres-fdm.post.1.f-4th.kind-one.sided	9 3.816	7 1-9	4.41e-1	1 6	5.07e-1	9	6.32e-1	9	7.56e-1	=	4.22e-1	∞	4.42e-1	7	5.11e-1	9	5.51e-1	9	6.58e-1	∞	f. 18e-1	9	1.91e-1	9 9	6.61e-1	5 7.	7.10e-1	22	3.57e-1

Table 16: 3D ball (p = 7)

					Р	bisect				_					go-to-one	one				_				-0	decrease-by-one	y-one				
	k.	k = 1	k = 2	. = 2	- -	k = 3	k	k = 4	k = 5	10,1	k.	k = 1	- k	= 2	k = 3		= ¥	= 4	k	10	k = 1	-	k = 2	_	k = 3	-	k = 4	_	k = 5	
	<i>i#</i>	t[s]	#	t[s]	·#	[s]	2#	t[s]	i#	t[s]	<i>i#</i>	t[s]	1#	t[s]	i#	[s]	<i>i</i> #	t[s]	i#	t[s]	<i>i#</i>	t[s]	:#:	t[s]	1 1#	t[s] ±	#i t[s]	_	#i t[·
cg-diagonal-1st_kind-two_sided	16	2.79e-1	6	2.10e-1	7	2.06e-1	9	2.12e-1	5	2.06e-1	37	6.06e-1	21 4	4.61e-1	15 4	1.13e-1	12 3	3.97e-1	11 4	1.25e-1	7 8.	.01e-1	6 2.	2.47e-1	4 2.1	2.14e-1	4 2.63e-1	e-1 :	3 2.3	.33e-1
cg-diagonal-4th_kind-two_sided	19	3.32e-1	10	2.34e-1	-	2.06e-1	9	2.12e-1	20	2.06e-1	44	7.20e-1	25 5	5.47e-1	18 4	.94e-1	14 4	4.62e-1	11 4	.24e-1	9 2	2.57e-1	5 2.	2.06e-1	4 2.1	2.14e-1	3 1.98e-i	le-1 5	3 2.3	2.33e-1
cg-fdm_symm_1_f-1st_kind-two_sided 8	8	1.61e-1	œ	2.30e-1	20	1.87e-1	4	1.84e-1	4	2.18e-1	14	2.60e-1	8	2.13e-1	6 2	2.07e-1	2	2.13e-1	4 2	2.02e-1	5 1.	.70e-1	6 3.	3.14e-1	5 3.5	52e-1	3 2.64e-1	e-1	3 3.17	7e-1
cg-fdm_symm_1_f-4th_kind-two_sided	10	2.00e-1	10	1.44e-1	4	1.49e-1	4	1.83e-1	· ·	1.63e-1	17	3.16e-1	10	2.66e-1	7 2	.42e-1	2	2.13e-1	4 2	2.05e-1	6 2	2.03e-1	4 2.	2.09e-1	4 2.8	2.81e-1	3 2.64e-1	e-1	3 3.18	3.18e-1
gmres-fdm_post_l_f-1st_kind-two_sided 7	7	1.62e-1	œ	2.62e-1	10	2.21e-1	4	2.25e-1	4	2.67e-1	13	2.88e-1	 «	2.43e-1	6 2	.41e-1	2	2.52e-1	4 2	2.47e-1	4 1.	.65e-1	6 3.	3.63e-1	4 3.4	3.46e-1	3 3.45e-1	e-1	3 4.18	5e-1
gmres-fdm post 1 f-1st kind-one sided	12	2.79e-1	6	2.90e-1	9	2.56e-1	20	2.69e-1	4	2.64e-1	15	3.39e-1	6	2.72e-1	7 2	76e-1	9	2.95e-1	22	5.98e-1	11 4	1.13e-1	7 4.	1.08e-1	5 4.0	4.07e-1	5 5.11e-1	e-1	1 5.13	le-1
gmres-fdm_post_1_f-4th_kind-two_sided 9	6	2:08e-1	2	1.70e-1	4	1.83e-1	4	2.25e-1	.7	2.13e-1	15	3.39e-1	6	2.73e-1	6 2	.40e-1	22	2.52e-1	4	2.47e-1	5 1.	1.98e-1	4 2.	2.56e-1	3 2.7	76e-1	3 3.45e-1	e-1	3 4.18	5e-1
gmres-fdm post 1 f-4th kind-one sided 10 2.30e-1	10	2.30e-1		2.28e-1	9	2.57e-1	9	3.15e-1	9	3.75e-1	15	3.39e-1	6	2.73e-1	7 2	76e-1	9	2.94e-1	3 9	3.49e-1	7 2	5.66e-1	6 3.	3.55e-1	5 4.0	1.06e-1	5 5.11e-1	e-1	5 6.13	5e-1