

Results for the preconditioner with flipped direction. Obtained by changing the definition of preconditioners from

```
Bp = alpha * Mass[k - 1] + (alpha + 1) * Stiff[k - 1]
Bu = Mass[k] / (alpha + 1) + Stiff[k]
```

to the flipped form

```
Bp = alpha * Mass[k - 1] + Stiff[k - 1]
Bu = Mass[k] + Stiff[k]
```

to implement the preconditioner

$$(1) \quad \mathcal{P} := \begin{bmatrix} I + d^*d & \\ & \alpha I + d^*d \end{bmatrix}^{-1}$$

that corresponds(?) to the flipped direction.

TABLE 1. 2D case

$h \backslash \log_{10}(\alpha)$	$k = 1$								$k = 2$							
	-4	-2	0	2	4	6	8	10	-4	-2	0	2	4	6	8	10
6.42e-02	3	3	4	9	25	17	5	5	1	2	4	10	27	33	9	2
3.17e-02	3	3	4	9	29	24	7	5	1	2	4	10	33	63	22	3
1.57e-02	3	3	4	9	30	38	11	5	1	2	4	10	40	115	49	3
7.83e-03	3	3	4	8	30	52	17	5	1	2	4	10	45	186	113	3
3.91e-03	3	3	4	8	30	62	28	7	1	2	4	10	49	240	260	3
1.95e-03	3	3	3	8	31	64	45	12	1	2	4	10	52	264	603	14
9.77e-04	3	3	3	8	31	64	64	17	1	2	4	10	55	273	1089	260

TABLE 2. 3D case

$h \backslash \log_{10}(\alpha)$	$k = 1$								$k = 2$								$k = 3$							
	-6	-4	-2	0	2	4	6	8	-6	-4	-2	0	2	4	6	8	-6	-4	-2	0	2	4	6	8
3.79e-01	2	2	3	4	11	20	7	4	1	1	2	3	11	25	14	4	1	1	2	4	11	28	15	3
2.64e-01	2	2	3	4	10	23	6	4	1	1	2	3	11	29	18	4	1	1	2	4	11	36	21	3
2.01e-01	2	2	3	4	10	26	8	4	1	1	2	3	10	32	25	5	1	1	2	4	11	37	28	3
1.37e-01	2	3	3	4	10	28	10	4	1	1	2	3	8	37	33	7	1	1	2	4	11	46	43	18
9.06e-02	2	2	3	4	10	30	13	4	1	1	2	3	8	40	48	9	1	1	2	4	11	52	69	31
6.28e-02	2	3	3	4	10	29	15	4	1	1	2	3	8	41	65	15	1	1	2	4	11	55	100	52