Runtime report

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1.

Damping factor	k	$\|\|e\|\|_{\text{inf}}$
$\omega = 1$	1	0.985055
$\omega = 1$	3	0.873408
$\omega = 1$	10	0.2381
$\omega = 1$	64	0.00325783
$\omega = 1.9$	1	0.759505
$\omega = 1.9$	3	0.217789
$\omega = 1.9$	10	0.0346207
$\omega = 1.9$	64	0.00732787

Above table shows the result for various parameter combinations of $\omega \in \{1, 1.9\}$ and $k \in \{1, 3, 10, 64\}$. We can notice the gradual decrease of error in higher Fourier modes, due to rapid oscialltary nature of initial approximation.