

**Table S2.** Comparative view of the computational time (in seconds) for 21442340 numerical calculations of rational GIF forms with various parameters (in APR zone),  $\varepsilon = 5 \times 10^{-14}$

Methods	Equation 5			Equation 3		
	$\lambda_h$	$\lambda_{wj}$	$\lambda_{md}$	$\lambda_h$	$\lambda_{wj}$	$\lambda_{md}$
Halley	42.946777	42.870691	42.596240	40.655886	40.047992	40.345553
Chebyshev	43.219398	42.111421	41.855935	40.004003	39.388638	40.153255
Kiss	42.941055	41.737283	41.794937	40.147708	40.086685	39.794306
E5	42.618547	41.787981	41.339767	40.489100	40.611620	39.645964
NR	40.926284	40.938882	40.144382	42.094548	42.064096	41.566620
NR with $f = 0.5$	62.256496	59.708629	56.368570	62.391468	62.599268	63.969490
Ostrowski	40.371375	39.939973	39.164714	39.399960	40.834458	39.272933
Chun	41.658960	40.617792	39.335719	41.024620	39.640031	38.922740
Cordero	41.649320	40.576487	39.022771	40.210814	39.669440	39.252490
Jarratt	44.636057	43.763875	43.763875	41.108508	40.633884	39.848276
Sharma–Sharma	14.029324	13.770798	12.924294	6.794839	6.174767	5.264773
BWR	27.160309	30.543855	26.684198	15.768769	18.384367	16.790652
BWR II	15.732240	14.874323	14.629713	7.316476	6.252836	5.951916
KT	13.874334	13.791948	13.296686	6.507381	5.768058	4.953166