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time_evolution (Calls: 25, Time: 56.141 s)

Generated 05-Aug-2024 09:50:34 using performance time.
function in file D:\Aalto\2324\BScThesis\FullRepo\parallelsimulations_finitebath\src\modular\time_evolution.m
Copy to new window for comparing multiple runs

Lines where the most time was spent

Line Number	Code	Calls	Total Time	% Time	Time Plot
28	`U_op = vel*U_t*(vel');`	25	27.876 s	49.7%	
32	`rho_t = U_op*rho0*(U_op');`	25	27.045 s	48.2%	
25	`U_t = expm((-1i/hbar)*tmax*el)...`	25	0.869 s	1.5%	
41	`end`	25	0.346 s	0.6%	
36	`e1 = diag(rho_t);`	25	0.003 s	0.0%	
All other lines			0.002 s	0.0%	
Totals			56.141 s	100%	

Children (called functions)

Function Name	Function Type	Calls	Total Time	% Time	Time Plot
expm	function	25	0.485 s	0.9%	
Self time (built-ins, overhead, etc.)			55.657 s	99.1%	
Totals			56.141 s	100%	

Function listing

```
  time    Calls   line
                   21 function E1 = time_evolution (N, hbar, tmax, vel, el, rho0)
                   22
                   23 % Time-evolution operator U(t)=exp(-iHt/hbar)
                   24 % in the eigenbasis of the Hamiltonian
 0.869       25    25 U_t = expm((-1i/hbar)*tmax*el);
                   26
                   27 % Spectral decomposition of the time-evolution operator
27.876       25    28 U_op = vel*U_t*(vel');
                   29
                   30 % Formal solution of Liouville-von Neumann equation
                   31 % rho(t) = U(t)*rho(0)*U(t)^dagger
27.045       25    32 rho_t = U_op*rho0*(U_op');
                   33
                   34 % A column (N+1) vector with the diagonal elements (probabilities of
                   35 % occupying the eigenstates) of the evolved density matrix
```

```
0.003      25    36 e1 = diag(rho_t);
                 37
                 38 % The part of the bath only, i.e. N
0.001      25    39 E1 = e1(1:N);
                 40
0.346      25    41 end
```