simulate>taylor_divAux (Calls: 1, Time: 1.463 s)

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subfunction in file D:\Cloud\Vysoké učení technické v Brně\HPC - Dokumenty\Articles\INFORMATICS_2019\MATLAB\MTSM_nonlinear\PVGN_better\simula
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☑ Show parent functions ☑ Show busy lines ☑ Show child functions
☑ Show Code Analyzer results ☑ Show file coverage ☑ Show function listing

Parents (calling functions)

Function Name	Function Type	Calls
simulate	function	1

Lines where the most time was spent

Line Number	Code	Calls	Total Time	% Time	Time Plot
395	`[GN_v2_T,GN_v2_Y,GN_v2_ORD,~] ...`	1	0.390 s	26.6%	
391	`[GN_v2_T,GN_v2_Y,GN_v2_ORD,~] ...`	1	0.389 s	26.6%	
401	`[VS_T,VS_Y,VS_ORD,~] = explici...`	1	0.259 s	17.7%	
387	`ind=load('DY_indexes_maxORD_GN...`	1	0.204 s	14.0%	
414	`figure`	1	0.041 s	2.8%	
All other lines			0.181 s	12.3%	
Totals			1.463 s	100%	

Children (called functions)

Function Name	Function Type	Calls	Total Time	% Time	Time Plot
explicitTaylorMult_GNPV_ver2_full	function	1	0.389 s	26.6%	

```
GN_v1_T,GN_v1_Y,GN_v1_TIME,GN_v1_ORD,GN_v1_ANAL,GN_v2_T,GN_v2_Y,GN_v
```

```
y(4);
;
y(6)*y(2)*y(4)*y(7)*y(7);
*y(4)*y(8)*y(8)*y(8);
```

```
ication constant
```

```
2_TIME,GN_v2_ORD,GN_v2_ANAL] = taylor_divAux(dt,tspan,init,tol,maxOI
```

RD,e,display)

explicitTaylorMult_GNPV_ver2_no_DY4	function	1	0.388 s	26.5%	
explicitTaylorMult	function	1	0.258 s	17.7%	
title	function	3	0.022 s	1.5%	
newplotwrapper	function	3	0.021 s	1.4%	
xlabel	function	1	0.009 s	0.6%	
ylabel	function	1	0.004 s	0.3%	
grid	function	3	0.002 s	0.1%	
hold	function	1	0.001 s	0.1%	
Self time (built-ins, overhead, etc.)			0.368 s	25.2%	
Totals			1.463 s	100%	

Code Analyzer results

Line number	Message
391	`The value assigned here to 'GN_v2_T' appears to be unused. Consider replacing it by ~.`
391	`The value assigned here to 'GN_v2_Y' appears to be unused. Consider replacing it by ~.`
391	`The value assigned here to 'GN_v2_ORD' appears to be unused. Consider replacing it by ~.`
396	`The value assigned to variable 'GN_v2_TIME_NODY4' might be unused.`
396	`Terminate statement with semicolon to suppress output (in functions).`

Coverage results

Show coverage for parent directory

Total lines in function	108
Non-code lines (comments, blank lines)	51

```
all_60','DY_ij','DY_ijk', 'DY_ijklm');
```

```
tTaylorMult_GNPV_ver2_full (dt,tspan,init,A,A2,A3,A4,A5,b,ij,ijk,ijk
```

```
tTaylorMult_GNPV_ver2_no_DY4 (dt,tspan,init,A,A2,A3,A5,b,ij,ijk,ijkl
```

```
lt (dt,tspan,init,A,A2,A3,A4,A5,b,ij,ijk,ijkl,ijklm,tol,ind,maxORD);
```

```
kl,ijklm,tol,ind,maxORD);
```

```
lm,tol,ind,maxORD);
```

Code lines (lines that can run)	57
Code lines that did run	57
Code lines that did not run	0
Coverage (did run/can run)	100.00 %

Function listing

Color highlight code according to time

time	Calls	line	
		327	function [VS_T,VS_Y,VS_TIME,VS_ORD,VS_ANAL,(
		328	% dy(1) = y(3);
		329	% dy(2) = y(4);
		330	% dy(3) = -y(1)*y(7);
		331	% dy(4) = -y(2)*y(7);
		332	% dy(5) = 3*y(6)*y(1)*y(3)+3*y(6)*y(2)*y
		333	% dy(6) = y(1)*y(3)*y(8)+y(2)*y(4)*y(8);
		334	% dy(7) = 3*y(6)*y(1)*y(3)*y(7)*y(7)+3*y
		335	% dy(8) = y(1)*y(3)*y(8)*y(8)*y(8)+y(2)*
		336	
< 0.001	1	337	ne=8;
< 0.001	1	338	A = zeros(ne,ne);
< 0.001	1	339	A(1,3) = 1;
< 0.001	1	340	A(2,4) = 1;
		341	
		342	% 2 multiplications -- ij
		343	% rhs - indeces of y(i) * y(j)
< 0.001	1	344	ij = [
		345	1,7; %1
		346	2,7; %2
		347	];
		348	
		349	% A(equation_index, ij_index) = multipli
< 0.001	1	350	A2=zeros(ne,size(ij,1));
< 0.001	1	351	A2(3,1) = -1;
< 0.001	1	352	A2(4,2) = -1;
		353	
		354	% 3 multiplications -- ijk
< 0.001	1	355	ijk = [
		356	6,1,3; % 1
		357	6,2,4; % 2
		358	1,3,8; % 3
		359	2,4,8; % 4
		360	];
		361	

```
=%f",e);


) - TAYLOR GNPV (div ORD)",e);


) - TAYLOR VS (div ORD)",e);


2_Y(2,:).^2/(1-e^2);
^2/(1-e^2);

; GN_v1_ORD = 0; GN_v1_ANAL = 0;
```

```
< 0.001        1   362     A3=zeros(ne,size(ijk,1));
< 0.001        1   363     A3(5,1) = 3;
< 0.001        1   364     A3(5,2) = 3;
< 0.001        1   365     A3(6,3) = 1;
< 0.001        1   366     A3(6,4) = 1;
                   367
< 0.001        1   368     ijkl = [];
< 0.001        1   369     A4=zeros(ne,size(ijkl,1));
                   370
                   371     % 5 multiplications -- ijkl
< 0.001        1   372     ijklm = [
                   373         6,1,3,7,7; % 1
                   374         6,2,4,7,7; % 2
                   375         1,3,8,8,8; % 3
                   376         2,4,8,8,8; % 4
                   377     ];
                   378
< 0.001        1   379     A5=zeros(ne,size(ijklm,1));
< 0.001        1   380     A5(7,1) = -3;
< 0.001        1   381     A5(7,2) = -3;
< 0.001        1   382     A5(8,3) = -1;
< 0.001        1   383     A5(8,4) = -1;
                   384
< 0.001        1   385     b=zeros(ne,1);
                   386
  0.204        1   387     ind=load('DY_indexes_maxORD_GN_ordered_a
                   388
                   389     % GNPV implemetation
< 0.001        1   390     tic
  0.389        1   391     [GN_v2_T,GN_v2_Y,GN_v2_ORD,~] = explici
< 0.001        1   392     GN_v2_TIME=toc;
                   393
< 0.001        1   394     tic
  0.390        1   395     [GN_v2_T,GN_v2_Y,GN_v2_ORD,~] = explici
< 0.001        1   396     GN_v2_TIME_NODY4=toc
                   397
                   398
                   399     % VS implementation
< 0.001        1   400     tic
  0.259        1   401     [VS_T,VS_Y,VS_ORD,~] = explicitTaylorMu
< 0.001        1   402     VS_TIME=toc;
                   403
< 0.001        1   404     if display
  0.040        1   405         figure
  0.008        1   406         plot(GN_v2_Y(1,:),GN_v2_Y(2,:));
```

```
< 0.001        1   407          grid on;
  0.009        1   408          xlabel('x');
  0.005        1   409          ylabel('y');
  0.001        1   410          hold on;
< 0.001        1   411          TITLE=sprintf("MTSM (div) - Orbit e=
  0.005        1   412          title(TITLE)
                   413
  0.041        1   414          figure
  0.008        1   415          plot(GN_v2_T,GN_v2_ORD,'*');
< 0.001        1   416          grid on;
< 0.001        1   417          TITLE=sprintf("Kepler problem (e=%f)
  0.009        1   418          title(TITLE)
                   419
  0.040        1   420          figure
  0.007        1   421          plot(VS_T,VS_ORD,'*');
< 0.001        1   422          grid on;
< 0.001        1   423          TITLE=sprintf("Kepler problem (e=%f)
  0.008        1   424          title(TITLE)
< 0.001        1   425      end
                   426
                   427      % analytical solution
< 0.001        1   428      GN_v2_ANAL = (GN_v2_Y(1,:)+e).^2 + GN_v2
< 0.001        1   429      VS_ANAL = (VS_Y(1,:)+e).^2 + VS_Y(2,:).^
                   430
                   431
< 0.001        1   432      GN_v1_T = 0; GN_v1_Y = 0;GN_v1_TIME = 0;
                   433
  0.035        1   434  end
```

Other subfunctions in this file are not included in this listing.