Wrapping GSL functions

1) The four GSL function calls have been merged into the more precise call "Hamiltonian". Also, is probably faster.

2) This code still compiled and ran, yes the loop worked. I looped from 2 → 20

OpenMP

1) 2 cores on my mac

2) The wall time calculation

3) num_time smaller than real by .02 s
   20 ms time it takes to setup variable)

2 threads	1 thread
num_time: 5.72958	num_time: 5.72958
CPU: 7.102s	CPU: 7.102s
Wall: 5.753s	Wall: 5.753s

4) OpenMP is shared memory
   time penalty to shared memory. Each process has to restart.
   Eventually a large N will cause the computer to

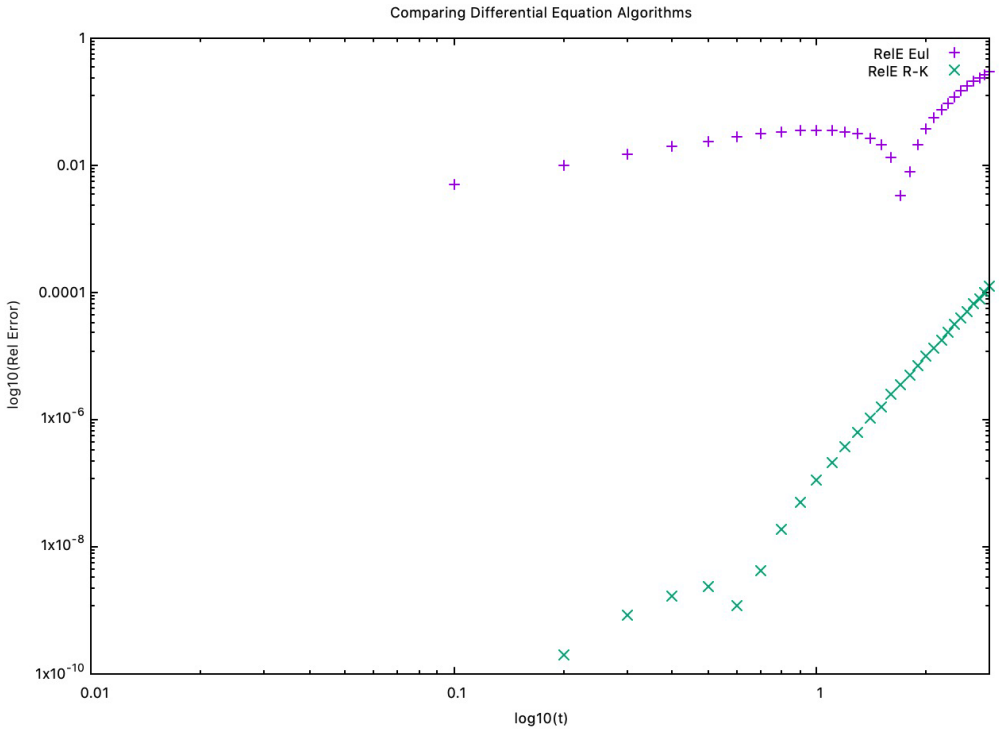
slow down. This means there is an optimal number of threads one should use

Integrating FODEs

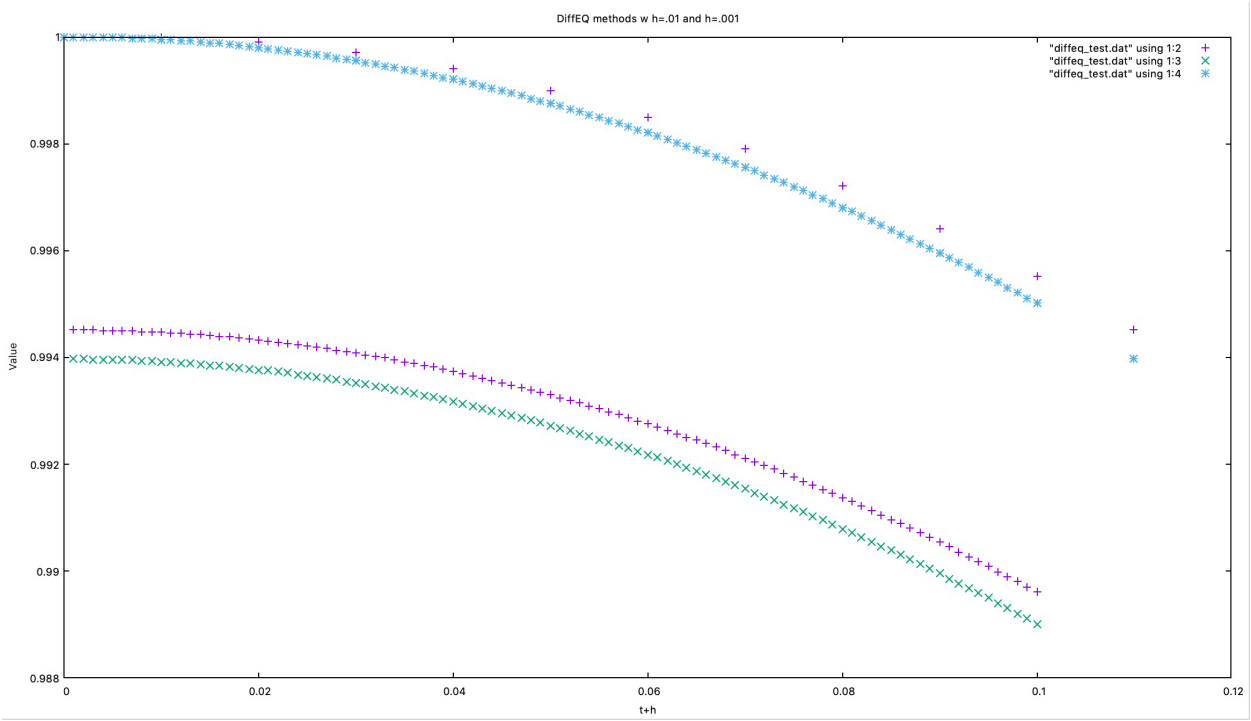
3. We can conclude the 4th order R-K method is also "exact", or at least close enough.

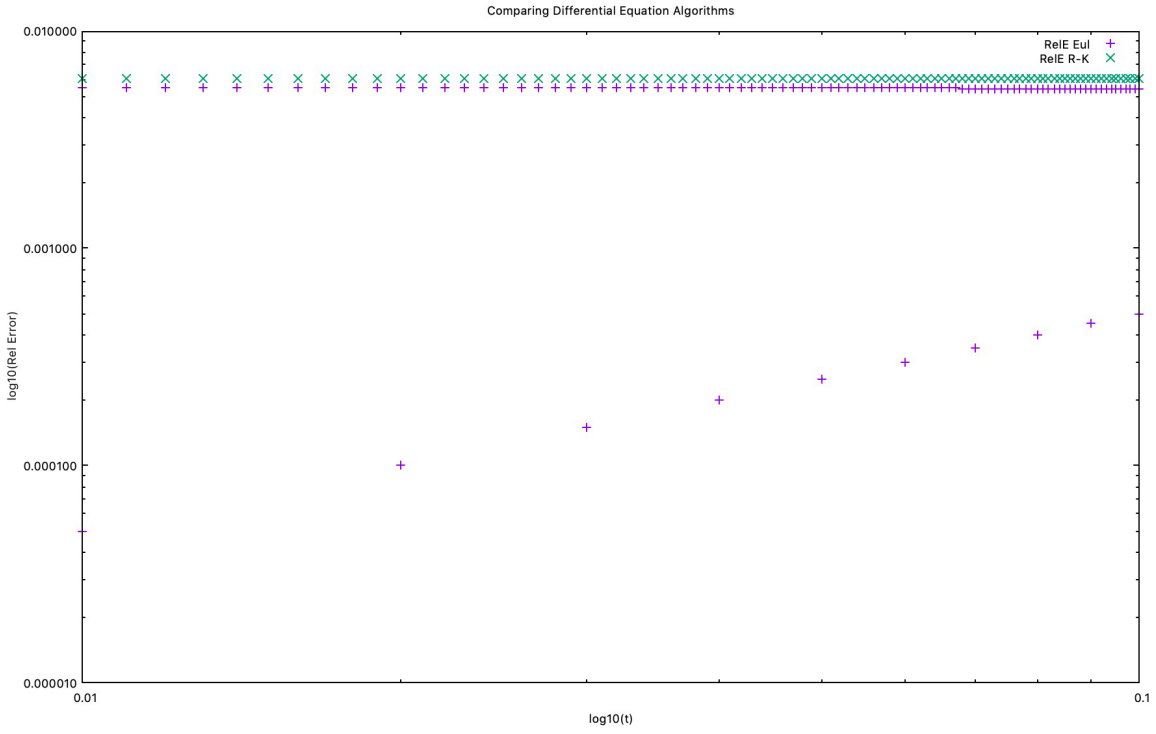
4. $e^{-t^2/2} = -t\,y'$

5. They do not scale linearly



6)


DiffEQ methods w h=.01 and h=.001
"diffeq_test.dat" using 1:2
"diffeq_test.dat" using 1:3
"diffeq_test.dat" using 1:4
Value
t+h
1
0.998
0.996
0.994
0.992
0.99
0.988
0
0.02
0.04
0.06
0.08
0.1
0.12


Comparing Differential Equation Algorithms
RelE Eul
RelE R-K
log10(Rel Error)
log10(t)
0.010000
0.001000
0.000100
0.000010
0.01
0.1