

Physics 7412, Fall 2013

Problem set 3

Due date: 10/09/13

Note: you can use “canned” subroutines as those of Numerical Recipes for solving this problems. See the web page.

Given the initial value problem,

$$y' = \frac{2}{t}y + t^2 e^t, \quad 1 \leq t \leq 2, \quad y(1) = 0 \quad (1)$$

with exact solution $y(t) = t^2(e^t - e)$, write a fourth order Runge–Kutta code and a Bulirsch-Stoer code for solving it and verify that the errors scale appropriately with the stepsize.