

HOMEWORK #6, PHY307/607, Fall 2002 – Due by start of class Oct. 1

1. More fireworks. Improve upon last week's fireworks program. Instead of random initial positions, give each spark a position at (0,0,0) and a **radius** of 0.2. After making the sparks, add a loop to give each spark a random *velocity vector*. Then update the locations using **mymodule.py** from Lab #6.

```
from mymodule import *

scene.autoscale = 0

## Build up a list of sparks by appending to the
## end of an initially empty list.
sparks = []
for i in range(100):
    sparks.append(sphere(radius=0.2))

## Initialize the velocity of each spark
for s in sparks:
    s.vel = vector(random()-0.5,
                   random()-0.5,random()-0.5)
    s.vel = s.vel/mag(s.vel)

## Set the strength of gravity and the time step.
grav = vector(0,-0.1,0)
dt = 0.05

## Main loop - repeat forever
while 1:
    rate(20)
    ### PUT IN BELOW WHAT YOU NEED TO STEP
    ### THE LIST OF SPARKS, UPDATING THEIR
    ### POSITIONS - SHOULD TAKE TWO LINES: A LOOP
    ### OVER sparks AND THE FUNCTION TO MAKE A
    ### PARTICULAR SPARK FALL
```

Submit the following:

- ?? Completed code.
- ?? An explanation or guess what the line `s.vel=s.vel/mag(s.vel)` does. Can you find the mag function under the VPython documentation? What do you see if instead you leave that line out?
- ?? An explanation of what the line `s.vel = vector(...)`, does.