ASTRONOMY 598: MONTE CARLO METHODS HOMEWORK 6

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Contents

README

This directory contains the code that answers question from homework 6 while this document provides additional content for the same questions. Specifically, `run_hw6.py` code runs 100 2D random walks for various step numbers and plots the mean square distance and error traveled. The script `run_hw6.py` generates the accompanying figure as well. To run, enter `python run_hw6.py`.

Running on Hyak

To run the code on Hyak, follow the instructions given below.

1) Create an interactive session by entering `qsub -I -l walltime=hr:min:sec` where hr = 03 is a safe amount of time

2) Find your favorite python distribution (2.7+ for this code) using `module avail`

3) Load the python distribution via `module load (name of package found using module avail)`. I recommend loading `anaconda_2.4`.

4) Run the script by typing `python run_hw6.py`

Problem 1

The code and figure for all parts are given in the accompanying file. Note: entering `python run_hw6.py` in the terminal will generate all the plots for this homework.

1a. See the accompanying code and comments for the implementation.

1b. See the accompanying plot. The simulated results are in excellent agreement with the theoretical expectation.