PHYS405
Advanced Computational Physics
Parallel Computing

Assignment # 5
Due: Friday, October 30, 2009

Purpose: Learn how to implement a master-slave parallel algorithm.
Note: Please identify all your work.

This assignment consists in rewriting the code performing the Monte-Carlo integral of the Gaussian function (see the web pages) in a master-slave algorithm.

Write the code so that the process 0 should only administer the calculation (i.e., take charge of the interface with the user, decide on the # random steps to be taken by each slave node, and perform the final Monte-Carlo sums from the sub-sums). The slave processes, processes 1 to *size-1*, should GENERATE the random walk steps AND perform the Monte-Carlo sub-sums.

Make sure that your code:

- agrees with the serial code
- handles an arbitrary number of nodes
- handles an arbitrary number of Monte-Carlo steps
- implements the logic of the refinement of the Monte-Carlo sums, e.g., a calculation with two ranges of random steps, say 20,000 followed by 30,000, is equivalent to a single calculation with the total # of steps, 50,000 for this case.