Parameter Sweeping for Age-Structure Model
Module 13.3, "Time after Time—Age- and Stage-Structured Models"

Introduction to Computational Science:
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MPI Commands Employed

#include <mpi.h>

int MPI_Bcast (void *buffer, int count, MPI_Datatype datatype, int root, MPI_Comm comm)

int MPI_Comm_rank (MPI_Comm comm, int *rank)

int MPI_Comm_size (MPI_Comm comm, int *size)

int MPI_Finalize()

int MPI_Init(int *argc, char ***argv)

int MPI_Recv(void *buf, int count, MPI_Datatype datatype, int source, int tag, MPI_Comm comm,

   MPI_Status *status)

int MPI_Send(void *buf, int count, MPI_Datatype datatype, int dest, int tag, MPI_Comm comm)

MPI_COMM_WORLD

MPI_DOUBLE

MPI_INT

MPI_Status

General Description
by Matt Beasley

The overall structure of the serial program must change to accommodate parallelization. The root, or main process, with the rank of SERVER, directs most of the program. After setting up many initial values, the root sends the combination and position information to all of the other processes. The root then waits for the other processes to send back the calculated values for writing to an output file. Each of the other processes, after receiving the broadcasted information from the root process, finds which eigenvalues to calculate based on its rank and the total number of eigenvalues. Each process then calculates its assigned eigenvalues and sends the results to the root process. After receiving the eigenvalues from all the processes, the root writes the results to an output file.