CE 598 – Peridynamics
October 1, 2015
Assignment #6

The purpose of this assignment is to learn how to create, run, and debug peridynamic programs in both MatLab and in FORTRAN. The goal is to become comfortable with programming and debugging in both MatLab and in FORTRAN. Provide your solution to the assignment in an MSWORD file, and provide a hardcopy printout.

(1) Unzip the attached the zip file to your computer. Run and debug the MatLab function "cableExample.m". Provide plots of the final configuration and of the time history of the vertical displacement of the rightmost particle.

(2) Open the SimplyFortran project called "cableExample.prj". Compile, run, and debug the program. Then run the MatLab functions "makeMovie.m" and "plotTimeHist.m". Provide plots of the final configuration and of the time history of the vertical displacement of the rightmost particle.

(3) Copy "cableExample.m" to "prob3.m". Change the boundary conditions so that the right-most particle in the reference configuration is now fixed in the x-direction, but free to move vertically. Provide plots of the final configuration and of the time history of the vertical displacement of the rightmost particle. Compare these plots for various time step sizes.

(4) Copy "cableExample.prj" to "prob3.prj". Copy "cable.f90" to "prob3cable.f90". Remove "cable.f90" from the project, and add "prob3cable.f90". Change (and save) the project so that it now creates the executable file "prob3.exe". Now, change the boundary conditions so that the right-most particle in the reference configuration is now fixed in the x-direction, but free to move vertically. Provide plots of the final configuration and of the time history of the vertical displacement of the rightmost particle. Compare these plots for various time step sizes.