PHY 422

Computational methods in Physics -I

Lab 7

Pdf file should be inside the .zip folder

1) Draw Gerschgorin Circle and get the bounds for

$$\begin{bmatrix} 4 & 1 & 1 \\ 0 & 2 & 1 \\ -2 & 0 & 9 \end{bmatrix} \qquad \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$$

2) Find the largest eigenvalue and the corresponding eigen vector of the matrix

$$\begin{bmatrix} -2 & 0 & -1 \\ 1 & -1 & 1 \\ 2 & 2 & 0 \end{bmatrix}$$

3) Find the smallest eigenvalue of the matrix

$$\begin{bmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 2 \end{bmatrix}$$

4) Use Given's method to get tri-diagonal system for

$$\begin{bmatrix} 15 & 4 & 3 & 2 & -1 \\ 4 & 25 & 6 & -7 & 8 \\ 3 & 6 & 27 & 8 & 9 \\ 2 & -7 & 8 & 319 & 10 \\ -1 & 8 & 9 & 10 & 100 \end{bmatrix}$$

5) Get the eigenvalues of the tri-diagonal setup achieved from 4 using Strum Sequence !

Lab Report Submission

PDF file with the flow chart, code and output

MS31199_3.pdf

If my Roll No. is MS31199 and submitting Lab Report No. 3 then

Prepare folder MS31199_3 containing files as:

MS31199_3.pdf
MS31199_3_code1.C
MS31199_3_code2.C
MS31199_3_code3.C and so on.
MS31199_3_output3.out
MS31199_3_input2.in

Assume that MS31199_3_output3.out is output of code3
And MS31199_3_input2.in is input for code2

Zip the folder as MS3119_3.zip and upload to moodle

Should contain
0) Problem
1) Algorithm
2) The code, just add the image of code
3) Instructions on system done
4) Output, just image of output
5) Summary

If you are given the Lab exercise today (Thursday), then deadline is next week Thursday afternoon (13:01)

Thursday, Friday, Saturday, Sunday, Monday, Tuesday, Wednesday