

Math 712 Final Project

- Instructions:** 1. *Everything must be returned in report form and must be type-written.*
2. *You must submit your code.*
3. *Late solutions are NOT accepted.*

- Problem:** (a) Try to find a numerical algorithm for solving PDEs that you are interested in and read journal articles and books about that numerical algorithm;
(b) Write an introduction and a summary about that numerical algorithm; make sure you mention that (i) what this algorithm is for; (ii) the accuracy, stability, and complexity of the algorithm; (iii) the advantages and disadvantages of the algorithm as compared with other methods;
(c) Implement the numerical algorithm and test it for simple cases, present both your code and test results;
(d) PhD Students will be asked to give a short presentation in the final week of the class;
(e) All students must hand in a report about the project.

Suggested Projects: Fast Poisson Solver, Multigrid methods, Finite Volume Methods, Level set methods, Immersed boundary methods, Shock wave and conservation laws, B-stability for ODE solvers.