Department of Mathematics and Statistics Colloquium

Modified Picard Iteration Applied to Boundary Value Problems

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Abstract: We demonstrate how the Modified Picard method can be applied to Two Point Boundary Value Problems and Volterra Integral Equations. First we present an algorithm for approximating solutions of two-point boundary value problems and then a theorem that gives conditions under which it is guaranteed to succeed. Then we introduce a new algorithm for the case if the original algorithm failed to converge on a long interval. We split the long interval into subintervals and show the new algorithm gives convergence to the solution. Finally, we repose a Volterra equation using auxiliary variables according to Parker-Sochacki in such a way that the solution can be approximated by the Modified Picard iteration scheme.

Monday, September 22 at 3:45 in Roop 103

refreshments at 3:30