Third order Parallel Splitting Techniques

For

The Solution of Two Dimensional Heat Equation

With Nonlocal Boundary Condition

By

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ID:13003109003

A THESIS SUBMITTED IN THE PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN
MATHEMATICS

Supervised by

Dr. MuhammadAziz ur Rehman

DEPARTMENT OF MATHEMATICS
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LAHORE, PAKISTAN

2016

بسم الله الرحمن الرحيم

In the name of Allah

the most Gracious

the most Compassionate

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Abstract

In this thesis our goal is to develop a third-order parallel splitting algorithm for solving linear partial differential equation in two dimensions with non local boundary condition. In this method third-order approximations are used to approximate spatial derivative and Simpson's 1/3 rule is used to approximate the non local boundary condition. Using this Parallel algorithm the results of numerical experiments are examined, presented and compared with the exact solution, as well as with the results already existed in the literature and found to be highly accurate.