İSTANBUL ANALYSIS SEMINARS

FINITE DIFFERENCE METHODS FOR ULTRA-PARABOLIC EQUATIONS

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Abstract: Mathematical models which are formulated in terms of ultra parabolic equations are of great importance in various problems for instance in age-dependent population model, in the mathematical model of Brownian motion, in the theory of boundary layers, etc. (see [1]-[8]). In this work, we consider the ultra-parabolic equations in a Banach space E with the strongly positive operator A. Finite difference schemes for ultra-parabolic equations are presented. The stability and coercive stability estimates for the solution of these difference schemes are established. In applications, the stability and coercive stability estimates for the solution of initial boundary value problem for ultra parabolic equations are obtained. The theoretical statements for the solution of this difference schemes are supported by the results of numerical experiments.

References

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