Approximation Theory and Special Functions
ATSF 2026 Conference - 9th Series
September 2-5, 2026, Ankara - Türkiye

Investigation of Hyperbolic Cahn-Hilliard Equations with Dynamic Boundary Conditions

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Abstract

Cahn-Hilliard equations were introduced to model phase separation processes in binary alloy-like materials [1]. In this work, we investigate the hyperbolic Cahn–Hilliard equation without a viscosity term under dynamic boundary conditions. We modify the boundary conditions in order to estimate certain terms arising in the analysis of the problem. Then, we define weak solutions for the problem and establish the existence of these solutions through the Faedo-Galerkin approximation method.

This work is supported by the Scientific and Technological Research Council of Türkiye (TÜBİTAK) through the ARDEB 3501 Career Development Program (Project No. 123F453).

Keywords: Hyperbolic Cahn-Hilliard equation, dynamic boundary conditions, Faedo-Galerkin method, weak solutions, energy methods.

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