All Sciences Proceedings
http://as-proceeding.com/

AS-ABSTRACTS
https://as-proceeding.com/index.php/as-abstracts
ISSN: 2980-1834

All Sciences Abstracts,
Volume 1, pp 3, 4, 2023

Stability result of solutions for a Transmition wave equation with internal neutral delay

Baibeche Sabah [*], Bouzettouta Lamine[2] and Karek Chafia [3]

[1]*Department of mathematics /Laboratory of Applied Mathematics and History and Didactics of Mathematics, University of 20 August 1955, Algeria*
[2]*Department of mathematics /Laboratory of Applied Mathematics and History and Didactics of Mathematics, University of 20 August 1955, Algeria*
[3]*Department of mathematics /Laboratory of Applied Mathematics and History and Didactics of Mathematics, University of 20 August 1955, Algeria*

[*]*(sabahbaibeche@gmail.com) Email of the corresponding author*

Abstract – This study examines a wave equation on a bounded domain that incorporates internal neutral delay. By establishing certain conditions, we prove the existence and uniqueness of the solution. Furthermore, we utilize semigroup theory to demonstrate the existence and uniqueness of the problem's solution. Additionally, we employ H. Levine's concavity theorem to establish a time estimate for the explosion of the solutions in Sobolev spaces.

Keywords – Internal Neutral Delay, Semigroup Theory, Sobolev Spaces, The Existence and Uniqueness.