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Abstract

This is the template for preparing the manuscript for submission to ENAMA. It is not allowed to use MACROS, or abbreviations or new names of the mathematical environment commands, for example, `\La` to represent the Laplacian, instead of LaTeX command `\Delta`. Also, do not add new commands such as: "user-package", "newcommand", etc. The work must have only two (2) pages. Please must use the two (2) pages to include the main results, proofs and references. Do not forget to compile the file twice, to correctly generate the references. This is an informative text and MUST BE REMOVED FROM YOUR WORK.

1 Introduction

The reference list (bibliography) at the end of this text can be generated as follows (do not forget to compile the file twice!):

```
\begin{thebibliography}{00}
\bibitem{}
\end{thebibibliography}
```

References are introduced in the text via the command `\cite{}`.

The equations are listed sequentially in the text, numbered on the right and using the command `\label{}` to identify them and the command `\eqref{}` whenever necessary mention them in the text. For example,

$$u''(x,t) - \mu(t)\Delta u(x,t) = 0 \quad \text{in} \quad Q, \tag{1.1}$$

the equations (1.1) was generated using the following commands

```
\begin{eqnarray}
\label{wave}
 u''(x,t)-\mu (t)\Delta u(x,t)=0\quad\mbox{in}\quad Q,
\end{eqnarray}
```

with initial and boundary conditions

$$u(x,0) = u^0(x), \quad u'(x,0) = u^1(x) \quad \text{in} \quad \Omega,$$
$$u(x,t) = 0 \quad \text{on} \quad \Gamma\times]0,\infty[,$$

where u is the displacement, Δ denotes the Laplace operator and μ is a positive real function, introduced by [1]. Existence and Uniqueness results can be found in [2, 3].

To generate the figures is recommended to use the following structure

*Article submitted to XIII ENAMA - UFSC

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```
\begin{figure}
\includegraphics[scale=]{}
\caption{}
\end{figure}
```

and are cited in the text via the command `\eqref{}` with the name of "label" in brackets, analogously the the equations.

Finally, to end the proof use `\cqd` or ■

2 Main Results

Theorem 2.1. *If* $u_0 \in H_0^1(\Omega) \cap H^2(\Omega)$ *and* $u_1 \in H_0^1(\Omega)$ *then the system has a unique solution in the class*

$$u \in L^\infty\left(0,\infty; H_0^1(\Omega) \cap H^2(\Omega)\right), \tag{2.1}$$

$$u' \in L^\infty\left(0,\infty; H_0^1(\Omega)\right), \tag{2.2}$$

$$u'' \in L^\infty\left(0,\infty; L^2(\Omega)\right). \tag{2.3}$$

Proof

References

[1] LIONS, J. L. - *Quelques méthodes de résolution des problèmes aux limites non linéares.*, Dunod-Gauthier Villars, Paris, First edition, 1969.

[2] SOBOLEV, S. I. - *Applications de analyse functionnelle aux équations de la physique mathématique*, Léningrad, 1950.

[3] COSTA, R.H. AND SILVA, L. A. - Existence and boundary stabilization of solutions. *Analysis Journal Theory*, **10**, 422-444, 2010.