جامعة عبد المالك السعدي
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Université Abdelmalek Essaadi

Pole for Doctoral Studies
Center for Doctoral Studies
Sciences, Technologies, and Medical Sciences

ANNOUNCEMENT OF DOCTORAL THESIS DEFENSE

Ms. ZEROUALI Rajae

Will present here research work with the aim of earning a Doctorate

Doctoral program: Mathematics, Physics and New Technologies (SMPNT)
Discipline: Mathematics
Specialty: Applied Mathematics

On 16/07/2025 at 11H00 at the Defense Hall of the Faculty of Sciences of Tetouan, UAE
Under the Theme

On the study of some quasilinear elliptic and parabolic problems with degenerate coercivity in generalized Sobolev spaces

Front of the jury composed of :

First Name & Last Name	Establishment	Designation
Pr. ZERTITI Abderrahim	FS of Tetouan, UAE	President
Pr. BOUZELMATE Arij	FS of Tetouan, UAE	Reviewer
Pr. YEBARI Naji	FS of Tetouan, UAE	Reviewer
Pr. ZINE EL ABIDINE Abdelali	FS of Rabat, UM5	Reviewer
Pr. ABERQI Ahmed	ENSA of Fes, USMBA	Examiners
Pr. CHABABI Fadil	FS of Tetouan, UAE	Examiners
Pr. HJIAJ Hassane	FS of Tetouan, UAE	Co-Supervisor
Pr. FERRAHI Bouchaib	FS of Tetouan, UAE	Supervisor

Research Laboratory: Research Laboratory of Numerical Analysis, Nonlinear Analysis and Applications (LaR2A).

Abstract

This thesis investigates some nonlinear and non-coercive elliptic and parabolic problems with-data or + in a bounded domain with Dirichlet-type boundary conditions in the framework of anisotropic Sobolev spaces or parabolic spaces with variable exponent.

This work, composed of five chapters, In the first chapter, we present some definitions and results required for the following chapters, and then we provide some examples of applications of elliptic and parabolic problems in many fields like: image restoration, electrorheological fluids, and elasticity.

In the second chapter, we prove the existence results of renormalized solutions for a nonlinear non-coercive elliptic equation with Hardy potential. In the third chapter, we study the existence and uniqueness of renormalized solutions for some quasilinear and noncoercive elliptic problem.

In the fourth chapter, we prove the existence of entropic solutions for unilateral problem associated to some quasilinear elliptic equation with degenerate coercivity. In the five and last chapter, we study the existence of entropic solution for some quasilinear p(x)-parabolic and non-coercive problem with the lower-order term in the framework of the parabolic Sobolev spaces with variable exponent.

Keywords: Elliptic equation, renormalized solutions, entropic solutions, Hardy potential, obstacle problem, anisotropic Sobolev spaces, anisotropic Sobolev spaces with variable exponent, parabolic equation..