Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : EL HAMI Given names : Abdelkhalak

Status (prof., assistant prof., ...) : Full Professor

Laboratory : LMN (Laboratoire de Mécanique de Normandie	Website address : www.insa-rouen.fr
Institution : Institut National des Sciences Appliquées - Rouen	Website address : www.insa-rouen.fr

Scientific competence :
optimization, composites materials, reliability, mechanical behaviors, numerical methods, new materials.
https://www.amazon.fr/s?k=el+hami+abdelkhalak&crid=X7JSHEACGD1M&sprefix=eel+hami%2Caps%2C65&ref=nb_sb_ss_sc_1_7

Two major publications in the field proposed for the PhD :
Bouguila.M, Dammak.K, A., Souf, M. A. B., El Hami, A., & Haddar, M. (2023). Multi-level Reliability-Based Design Optimization (RBDO) study for electronic cooling: Application of heat sink based on multiple phase change materials
Dammak, K., Baklouti, A., & El Hami, A. (2023). Robust method for the identification of dynamical anisotropic flexible bearing parameters using multi-objective optimization and structural modification technique Mechanical Systems and

Website address of the personal page : www.insa-rouen.fr
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Description of the research work proposed for a PhD ***Topic # (see list) :*** IV-8 &IV-10

Title : Reliability and optimization. Application to safety structures

Subject :
The objective of Reliability-Based Design Optimization is to design structures that should be both economic and reliable. The coupling between physical modeling, reliability analysis and optimization methods lead to very high computational cost and weak convergence stability.
Hybrid method based on simultaneous solution of the reliability and the optimization problem successfully reduced the computational time but leads to solve a more complex problem with both deterministic and random variables.
Computer simulation can be used to represent in detail the performance of more complex systems, such as material, mechanical or electrical systems. We want to take advantage of the new developments in high-level continuous systems simulation languages.
They are application-oriented software systems designed to mathematically model and analyze the behavior of piecewise-continuous systems described by differential equations. We propose a new methodology to compute safety factors satisfying a required reliability and optimization level without demanding additional computing cost for the reliability evaluation.
Application to safety of advanced material and structures.
Keywords :
Reliability, Optimization , Structural safety, design, material

Expected collaborations :

Background required from the applicant :
Enginneer science/ Goud base on the fundamental mechanics theory

Existence of a PDF file detailing the proposal ("yes" or "no") : no
(see guidelines on the website www-csc.utt.fr)