

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 : FLORENTIN Given names : ERIC

Status (prof., assistant prof., ...) : Prof.

Laboratory : Laboratoire Gabriel Lamé Website address : <http://www.univ-orleans.fr/Lamé>

Institution : INSA Centre Val de Loire Website address : www.insa-centrevaldeloire.fr

Scientific competence of the supervisor:

Verification and Validation, Error estimation, Finite Element Analysis, Identification, Stochastic simulations, Reduced models

Two major publications in the field proposed for the PhD :

1. L. Gallimard, E. Florentin, D. Ryckelynck. Towards error bounds of the failure probability of elastic structures using reduced basis models. International Journal for Numerical Methods in Engineering. n°112, issue 9,
2. E. Florentin, P. Diez. Adaptive reduced basis strategy based on goal oriented error assessment for stochastic problems. Computer Methods in Applied Mechanics and Engineering, n°225-228, p 116--127 (2012)

Website address of the personal page :

Supervisor's email : eric.florentin@insa-cvl.fr

Description of the research work proposed for a PhD Topic # (see list) : IV-6

Title : Estimation of quality of approximated solutions of mechanical problems with stochastic data.

Subject :

Background, context:

Ever-growing computational power allows to simulate physical phenomena of increasing complexity. In particular, it can be interesting to take into account the lack of knowledge about the parameters of the model concerning geometry, material behavior, boundary conditions or about the model itself. Different numerical techniques for solving these types of problem have been developed recently.

Description of the work:

In this work, we study the efficiency of numerical methods employed in this framework. In particular, we are interested in studying errors due to approximations done. The goal is to develop techniques that improve the computation quality and preserve the computational cost. An optimal choice of the simulation parameters can be done using an error indicator. The objective is to design a tool which can be efficient on industrial structures.

Keywords :

Finite element analysis, uncertainties, numerical method

Expected collaborations :

Background required from the applicant :

Motivated student with good academic performance.
Good knowledge of structural mechanic computations and numerical techniques.
Skills and sense in programming.

Existence of a PDF file detailing the proposal ("yes" or "no") : YES

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