

# Homogeneization And Local Defects.

Master thesis proposal

**Advisor :** Professor Jean Jacques Marigo

**Location :**

Laboratoire de mécanique des solides

Ecole Polytechnique

91128 Palaiseau Cedex

[marigo@lms.polytechnique.fr](mailto:marigo@lms.polytechnique.fr)

**Duration:** 4 to 6 months

**Financial conditions:** around 550 euros/month net.

This subject is the continuation of the master thesis of Dang Thi Bach Tuyet in 2008.

It is related to the four years research project EPSILON devoted to "Domain decomposition and multi-scale computations of singularities in mechanical structures".

The aim of this Master's thesis is to get acquainted with matched asymptotic expansions.

After studying the method on simple cases, the student will apply it to a more realistic problem.

This will be the case of a 2D elastic structure with strengtheners included along a structural curve and periodically distributed.

The goal is to determine the influence of these strengtheners on the global behavior of the structure.

Theoretical analysis will be coupled with numerical computations using Finite Element software.

Prerequisites:

Solid Mechanics: Elasticity

Mathematics: variational methods, numerical analysis, Matlab.

A three years Phd allowance is planned following this Masters Thesis , coadvisor Professor Laurence Halpern, University of Paris 13. It will concern the coupling of asymptotic expansions and domain decomposition for the computation of local defects.

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