

Prof. Marco PICASSO

Mathematics Institute of Computational Science and Engineering - MATHICSE

SEMINAR OF NUMERICAL ANALYSIS

➤ **THURSDAY 9 JULY 2015 - ROOM MA A1 10 - 16h15**

Prof. Andrea BONITO, (Texas A&M University, Tamu, USA) will present a seminar entitled:

"Bilayer plates: from model reduction to gamma-convergent finite element approximation"

Abstract:

The bending of bilayer plates is a mechanism which allows for large deformations via small externally induced lattice mismatches of the underlying materials. We discuss its mathematical modelling, which consists of a nonlinear fourth order problem with a pointwise isometry constraint. We devise a finite element discretization based on Kirchhoff quadrilaterals and prove its Gamma-convergence. We propose an iterative method that decreases the energy and study its convergence to stationary configurations. We explore its performance, as well as reduced model capabilities, via several insightful numerical experiments involving large (geometrically nonlinear) deformations.

This is joint work with S. Bartels (Albert-Ludwigs-Universität Freiburg) and R.H. Nochetto (University of Maryland).

Lausanne, 9 June 2015/MP/cr

The MATHICSE seminars are announced at <http://mathicse.epfl.ch/seminars>