ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

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## SEMINAR OF NUMERICAL ANALYSIS

➤ **THURSDAY  2  FEBRUARY  2017  -  ROOM MA A3 30  -  16h15**

**Prof. Philippe G. CIARLET** (City University of Hong Kong) will present a seminar entitled:

# «Nonlinear estimates for surfaces in terms of their fundamental forms, and applications »

Abstract:

It is well known that a surface can be recovered from its two fundamental forms if they satisfy the Gauss and Codazzi-Mainardi compatibility equations on a simply-connected domain, in which case the surface is uniquely determined only up to isometric equivalence.
 It is less known that in this case the surface becomes a continuous function of its fundamental forms, again up to isometric equivalence, for various topologies, such as the Fréchet topology of continuously differentiable functions, or those correponding to various Sobolev norms.
 In this talk, we will review such continuity results obtained during the past fifteen years, with special emphasis on those that can be derived by means of nonlinear Korn inequalities on a surface.
 We will also mention potential applications of such results, such as the intrinsic approach to nonlinear shell theory, where the unknowns are the fundamental forms of the deformed middle surface of a shell, or the numerical reconstruction of the Earth surface by means of the knowledge of its fundamental forms on a discrete grid.

Lausanne, 25 January 2017/AA/cr

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