



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

***Institut de mathématiques des sciences computationnelles et ingénierie
MATHICSE***

***SEMINAIRE D'ANALYSE
NUMERIQUE***

➤ ***MERCREDI 17 Février 2010 à 16h15 à la salle MA A110***

Prof. Philippe CHARTIER (INRIA Rennes, France) donnera une conférence intitulée:

"AN AVERAGING TECHNIQUE FOR HIGHLY-OSCILLATORY PROBLEMS "

We show how B-series may be used to derive in a systematic way the analytical expressions of the high-order stroboscopic averaged equations that approximate the slow dynamics of highly oscillatory systems. The Fermi-Pasta-Ulam model and the inverted Kapitza pendulum are used as illustrations. For the former it is shown that our approach establishes the adiabatic invariance of the oscillatory energy. Finally we use B-series to analyze multiscale numerical integrators that implement the method of averaging.

We construct integrators that are able to approximate not only the simplest, lowest order averaged equation but also its high-order counterparts.

Joint work with Ander Murua and Jesus-Maria Sanz-Serna.

Lausanne, le 27 janvier 2010
Prof. Assyr Abdulle
VL

Les séminaires qui ont lieu à la Section de Mathématiques sont annoncés sur Internet à l'adresse WWW (<http://memento.epfl.ch/cgi-bin/memento/select?memento=MATHS>)