Soutenance de thèse

Mercredi 28 Septembre 2016 à 14h00
Salle des séminaires Richard Planel, bâtiment D1

Mechanical nonlinear dynamics of a suspended photonic crystal membrane with integrated actuation

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Nonlinearities in nanomechanical systems can arise from various sources such as spring and damping mechanisms and resistive, inductive, and capacitive circuit elements. Beyond fundamental interests for testing the dynamical response of discrete nonlinear systems with many degrees of freedom, non-linearities in nanomechanical devices, open new routes for motion transduction, nanomechanical sensing, and signal processing. We investigate the nonlinear response of a nanomechanical resonator consisting in a suspended photonic crystal membrane acting as a deformable mirror. Actuation of the membrane motion in the MHz frequency range is achieved via interdigitated electrodes placed underneath the membrane. The applied electrostatic force induces mechanical non-linearities, in particular bistability, superharmonic and stochastic resonances.

Membres du jury:

Dr. Francesco MARIN	LENS (Florence, Italy)	Rapporteur
Prof. Andrea FIORE	TU Eindhoven (Pay-bas)	Rapporteur
Dr. Philippe BOUCAUD	CNRS-C2N (Paris-sud, France)	Examinateur
Dr. Alfredo DE ROSSI	Thales Research and Technology (Palaiseau, France)	Examinateur
Prof. Eva WEIG	Université de Konstanz (Allemange)	Examinateur
Dr. Rémy BRAIVE	Université Paris 7/CNRS-C2N	Encadrant
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