Mathieu RODRIGUEZ
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26 years – Single – French nationality

PhD Candidate

Education

Since 2006 **PhD student** (due to October 2009) both at the Hydrodynamics Laboratory, Department of Mechanics, **École Polytechnique**, Paris, and the Integrative Physics and Physiology of Fruit and Forest Trees Laboratory at the French National Institute for Agricultural Research (INRA), Clermont-Ferrand, France..
Thesis subject: «Spatial and temporal organisation of tree vibration dynamics».

2004 – 2006 **Master of applied Science (M.A.Sc.)** in mechanical engineering at **École Polytechnique de Montréal** (Canada) at the Fluid-Structure Interaction Research Chair.
Master thesis: «Numerical analysis of the dynamics of the wake flow downstream a forced oscillating cylinder.».

2001 – 2004 Graduate engineer from **École Nationale Supérieure d'Hydraulique et de Mécanique de Grenoble, Institut National Polytechnique de** (ENSHMG, INPG).

Work experience

Jan. – May 2004 Internship at the Fluid-Structure Interaction Research Chair, Ecole Polytechnique de Montréal,
Dynamics of vortex-induced vibrations. Numerical analysis of the flow downstream a transverse forced oscillated cylinder.

June – Aug. 2003 Internship at Alstom Fluides et Mécaniques, Centre d'Etudes et de Recherche de Grenoble,
Preliminary design of a transportable water turbine.

Skills

Language : English: fluent ; Italian: basic.

Informatics : Numerical analysis: Matlab, Python.
Numerical modelling of fluids and solids: Fluent, Castem.
Programming in C.
CAD with Solidworks et Ideas.

Personal interests

-Climbing, trekking, ski.

Publications

Refeered publications

RODRIGUEZ, M., de LANGRE, E. and MOULIA, B. 2008. A scaling law for the effects of architecture and allometry on tree vibration modes suggests a biological tuning to modal compartmentalization. *American Journal of Botany*, 95:1523-1537.

DIENER, J., RODRIGUEZ, M., BABOUD, L. and REVERET, L. 2009. Wind Projection Basis for Real-Time Animation of Trees (Proceedings of Eurographics 2009). *Computer Graphics Forum*, 28:533-540.

SCHINDLER, D., VOGT, R., FUGMANN, H., RODRIGUEZ, M., SCHONBORN J. and MAYER, H. 2009. Vibration behavior of plantation-grown Scots pine trees in response to wind excitation. *Agricultural and Forest Meteorology*, Submitted.

Conference proceedings (, speaker)*

*RODRIGUEZ, M., de Langre, E. and MOULIA, B. 2007. A numerical analysis of the effects of tree architecture on its dynamics. Proc. *International Conference on Wind and Trees*, 5-9 August 2007, Vancouver, British Columbia, Canada.

*RODRIGUEZ, M., de LANGRE, E. and MOULIA, B. 2009. A scaling law reveals the control of tree vibration modes through tree architecture and branch allometry. *6th Plant Biomechanics Conference*, 16-21 Nov. 2009, Cayenne, France.

RODRIGUEZ, M., MOULIA, B and de *LANGRE, E. 2009. Experimental investigations of a walnut tree multimodal dynamics. *2nd International Conference Wind Effects on Trees*, 13-16 Oct. 2009, Freiburg, Germany.

*RODRIGUEZ, M., MOULIA, B and de LANGRE, E. 2009. Experimental investigations of a walnut tree multimodal dynamics. *7th Euromech Solid Mechanics Conference*, 7-11 Sept. 2009, Lisbon, Portugal.

*RODRIGUEZ, M., de LANGRE, E. and MOULIA, B. 2007. A numerical analysis of the effects of tree architecture on its dynamics. Proc. *International Conference on Wind and Trees*, 5-9 August 2007, Vancouver, British Columbia, Canada.

RODRIGUEZ, M. and MUREITHI, N.W. 2006. Cylinder wake dynamics in the presence of stream-wise harmonic forcing. Paper PVP2006-ICPVT11-93847. Proc. *ASME Pressure Vessels and Piping/ICPVT-11 Conference*, 23-27 July 2006, Vancouver, British Columbia, Canada.

MUREITHI, N.W. and *RODRIGUEZ, M. 2005. Stability and bifurcation analysis of a forced cylinder wake. Paper IMECE 2005-79778. Proc. *ASME Int'l Mech. Engrg. Congress & Exhibition*, 5-11 November 2005, Orlando, Florida, USA.

*RODRIGUEZ, M. and MUREITHI, N.W. 2005. Dynamics of a forced 2D cylinder wake. Proc. *CANCAM*, 30 May - 02 July 2005, Montréal, Canada.

*MUREITHI, N.W., COTOI, I. and RODRIGUEZ, M. 2004. Response of the Karman wake to external periodic forcing and implication to vortex shedding control, Proc. *8th Int'l Conf. on Flow-Induced Vibrations*, 6-9 July 2004, Paris, France.