



**5th Women in Mathematics Summer School on Mathematical Theories
 towards Environmental Models
 27 May - 1 June 2013**

**Venue: Main Lecture Hall, ICTP Leonardo da Vinci Building
<http://agenda.ictp.it/smr.php?2468>**

SUGGESTED READING

We have received some enquiries about suggested reading for the courses of the School. Please find below some indications received from mini-course directors:

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Isogeometric analysis (Carlotta Giannelli)

T. J. R. Hughes, J.A. Cottrell, Y. Bazilevs, Isogeometric analysis: CAD, finite elements, NURBS, exact geometry and mesh refinement, Computer Methods in Applied Mechanics and Engineering 194, 4135-4195 (2005)

<http://dx.doi.org/10.1016/j.cma.2004.10.008>

C. de Boor, A practical guide to splines, Springer, revised ed. (2001)

J. Austin Cottrell, Thomas J. R Hughes, Yuri Bazilevs, Isogeometric Analysis: Toward Integration of CAD and FEA, Wiley (2009)

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Numerical analysis of environmental flows (Chiara Simeoni)

Frank M. White, Fluid Mechanics, McGraw-Hill Series in Mechanical Engineering, McGraw-Hill College, 1998;

Alfio Quarteroni, Numerical Models for Differential Problems, Springer-Verlag Italia, Milan, 2009;

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Dynamical Systems and bifurcation theory with applications to the dynamics of planet earth. (Karin Mora and Stefanie Hittmeyer)

Smooth dynamical systems:

Exploiting Nonlinear Behavior in Structural Dynamics
CISM Courses and Lectures Volume 536, 2012, pp 1-52 Introductory Material
Lawrie Virgin, David Wagg

Nonsmooth dynamical systems:

di Bernardo, M., Budd, C. J., Champneys, A. R., Kowalczyk, P., Nordmark, A. B., Tost, G. O. and Piiroinen, P. T., 2008. Bifurcations in Nonsmooth Dynamical Systems. Siam Review, 50 (4), pp. 629-701.

G.W. Housner (1963) "The behavior of inverted pendulum structures during earthquakes, Bulletin of the Seismological Society of America, 53, pp.403-417.

W.T Fielder, L.N. Virgin and R.H. Plaut (1997) "Experiments and simulation of overturning of an asymmetric rocking block on an oscillating foundation", European Journal of Mechanics A: Solids, 16, pp.905-923.

O. Makarenkov and J.S.W. Lamb (2012) "Dynamics and bifurcations of nonsmooth systems: a survey", Physica D, 241, pp. 1826-1844.

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Nonlinear Partial Differential Equations (Giuseppina Autuori and Francesca Colasuonno)

Course by Prof. Patrizia Pucci. Suggested reading concerning the lecture topics are the following papers and the references therein.

S. Alama, G. Tarantello, Elliptic problems with nonlinearities indefinite in sign, J. Funct. Anal. 141 (1996) 159-215.

A. Ambrosetti, H. Brezis, G. Cerami, Combined effects of concave and convex nonlinearities in some elliptic problems, J. Funct. Anal. 122 (1994) 519-543.

G. Autuori, P. Pucci, Existence of entire solutions for a class of quasilinear elliptic equations, NoDEA Nonlinear Differential Equations Appl. (2012) 34 pp., DOI 10.1007/s00030-012-0193-y, in press.

C. Brandle, E. Colorado, A. de Pablo, A concave-convex elliptic problem involving the fractional Laplacian, Proc. Roy. Soc. Edinburgh Sect. A., arXiv:1006.4510, in press.

D.G. De Figueiredo, J.-P. Gossez, P. Ubilla, Local "superlinearity" and "sublinearity" for the p-Laplacian, *J. Funct. Anal.* 257 (2009) 721-752.

E. Di Nezza, G. Palatucci, E. Valdinoci, Hitchhikers guide to the fractional Sobolev spaces, *Bull. Sci. Math.* 136 (2012) 521-573.

I. Ekeland, The mountain pass theorem and some applications, in *Minimax results of Lusternik-Schnirelman type and applications*, 9-34, *Sem. Math. Sup.* 107, Presses Univ. Montral, Montreal, QC, 1989.

Q. Lu, Compactly supported solutions for a semilinear elliptic problem in \mathbb{R}^n with sign-changing function and non-Lipschitz nonlinearity, *Proc. Roy. Soc. Edinburgh Sect. A* 141 (2011) 127-154.

P. Pucci, V. Radulescu, Combined effects in quasilinear elliptic problems with lack of compactness, *Rend. Lincei Mat. Appl.*, Special Volume dedicated to the memory of Prof. G. Prodi, 22 (2011) 189-205.

R. Servadei, E. Valdinoci, Mountain pass solutions for non-local elliptic operators, *J. Math. Anal. Appl.* 389 (2012) 887-898.

Course by Prof. Michel Chipot. The participants could browse the book *M. Chipot, Elliptic Equations: An Introductory Course, Birkhäuser Basel, 2009*. In any case, basic knowledge of H^1_0 and weak formulations should be fine.

Course by Prof. Vicentiu Radulescu. The lectures will be focused on the Mountain Pass Theorem and related results. The participants are invited to read Chapter 1 and 3 and the Applications on pp. 76-80 of the book *V. Radulescu, Qualitative Analysis of Nonlinear Elliptic Partial Differential Equations: Monotonicity, Analytic, and Variational Methods, Contemporary Mathematics and Its Applications, Volume 6, 2008*, which can be downloaded from the web page of the School (within ICTP campus only).

Course by Prof. Peral: The participants are invited to read the two papers that can be downloaded from the programme (*see web page of the School*) and consider the references therein.