# http://pmc.polytechnique.fr/pagesperso/mp/pictures/logo_small.gifPhase-field models for the evolution of complex structures

Summer school

Peyresq (France), 23 september to 4 october, 2013

## Financial support

[](http://www.cnrs.fr/)Main sponsor:

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## Topic

The phase-field method is a compact and elegant tool for the numerical modelling of problems that involve moving boundaries. In recent years, it has been applied to a large variety of subjects, including microstructure evolution in materials (solidification, precipitation, grain growth), multi-phase flows (fingering, droplet coalescence), fracture, soft matter and biophysics (membrane dynamics, vesicles). The key idea of this method is to represent the moving surfaces by an auxiliary field, the phase field, which exhibits a steep but smooth (diffuse) interface. The evolution of this field is governed by equations that can be obtained from the fundamental principles of out-of-equilibrium thermodynamics.

## Goal and scope

This school is mainly intended for Ph.D. students and young researchers that already have a first experience with the phase-field method (on any topic) and who wish to deepen their understanding of the fundamentals, and/or wish to see applications in other domains to broaden their knowledge about the possibilities of the method. Complete beginners in phase field can be accepted if they have a strong background in at least one of the following fields: statistical physics, materials science, thermodynamics and phase transitions. The school will last two weeks. In the first week, the focus will be on the fundamentals; in the second week, various applications will be presented. Practical sessions on several numerical examples of model problems will also be offered. Participants will be given an opportunity to present their work by a poster. The lecturers will be available for discussions with the participants during the entire session.

## Lecturers and program

The lecturers come from various european countries and have all contributed to new developments on phase-field models and their applications in recent years:

* Benoît Appolaire, ONERA, Châtillon, France
* Janin Eiken, Access, Aachen, Germany
* [Yann Le Bouar](http://zig.onera.fr/%7Elebouar/index.html), CNRS/ONERA, Châtillon, France
* [Hervé Henry](http://pmc.polytechnique.fr/%7Ehh/), Ecole Polytechnique, Palaiseau, France
* [Mathis Plapp](http://pmc.polytechnique.fr/mp), Ecole Polytechnique, Palaiseau, France
* Tamás Pusztai, Wigner RCP, Budapest, Hungary
* [Robert Spatschek](http://www.mpie.de/index.php?id=cm-members&name=spatschek&cHash=60bfd410eb" \t "blank), Max-Planck-Institute for Iron Research, Düsseldorf, Germany
* [Axel Voigt](http://tu-dresden.de/die_tu_dresden/fakultaeten/fakultaet_mathematik_und_naturwissenschaften/fachrichtung_mathematik/institute/wir/staff/Professoren/voigt_html" \t "blank), Technical University Dresden, Germany

The [program](http://pmc.polytechnique.fr/pagesperso/mp/PF/Program_phiECS.pdf) of the school.

## Practical information

[](http://www.peiresc.org/)

* Location: Peyresq is a village situated in the french Alps, about 100 km north of Nice. See [here](http://www.peiresc.org/) for detailed information (in french and english).
* Transportation: Nice has an international airport, and can also be reached by train. Transfer to Peyresq will be organized on the afternoon of the starting day.
* Fees:
  + 300 Euros for Ph.D. students,
  + 500 Euros for postdocs,
  + 700 Euros for permanent researchers.

This includes meals and lodging in the historic village of Peyresq (mostly in double rooms or small apartments).  
**Note:** since this school is sponsored by the CNRS (continuing education), participation is free for CNRS personnel.

## Application and registration

The application for the school is now **closed**. However, for replacement of cancelled participants, the [application form](http://pmc.polytechnique.fr/pagesperso/mp/PF/ApplicationForm.doc) (format: MS Word) is still available. Please fill it in and send it back by email to the address phasefield2013@onera.fr .

The registration is a two-step process:

* Pre-registration: at the URL <http://dr05.azur-colloque.cnrs.fr/>. The name of the school is PHIECS. Select "Preregistration". Note that in the english version of the website, the "tarification" scroll bar is not so clear: "Student/University" stands for "Academic staff/Researcher with a permanent position"; "Student" stands for "PhD student";"PostDoc" stands for "PostDoc".
* Then you will have to wait until we have time to check if everything is correct, and you will get notified that you can register.
* Registration: Payment needs to be made by **credit card**. Only the french labs related to the CNRS and that have to use the "bon de commande" procedure will select the "bank transfer" option.

Further information and inquiries: phasefield2013@onera.fr

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