

**Programme on  
“Nonlinear Flows”**

**May 30 – July 15, 2016**

**organized by**

**Eduard Feireisl (Czech Academy of Sciences, Prague), Ansgar Jüngel (TU Vienna), Alexander Mielke (WIAS, Berlin), Giuseppe Savaré (U Pavia), Ulisse Stefanelli (U Vienna)**

**Mini-Course 4**

**“Variational motion in heterogeneous media”  
by Andrea Braides, University of Rome 2**

**June 27 – June 29, 2016**

• **Monday, June 27, 2016**

10:00 – 12:00 **Andrea Braides**

*Variational motion in heterogeneous media: Lecture 1*

• **Tuesday, June 28, 2016**

10:00 – 12:00 **Andrea Braides**

*Variational motion in heterogeneous media: Lecture 2*

• **Wednesday, June 29, 2016**

10:00 – 12:00 **Andrea Braides**

*Variational motion in heterogeneous media: Lecture 3*

**All talks take place at the ESI, Boltzmann Lecture Hall!**

**Abstract:** I will consider the problem of defining an effective variational motion for oscillating energies. The minimizing-movement scheme or implicit Euler scheme is a commonly used method to define gradient-flow type dynamics in a variational framework and can be adapted to this problem, obtaining effective motions that in general depend on the interaction between time and space scales. I will review general theorems that link those effective motions to that of the Gamma-limit of the oscillating energies. After a simple example in one dimension, I will concentrate on geometric motion of interfaces as gradient-flow type dynamics for (continuous and discrete) perimeter energies, highlighting different ways in which local minima of heterogeneous perimeter energies affect the corresponding effective motion.