Homogenization and compensated compactness

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The course is a basic introduction to homogenization and to the notion of G-convergence (or H-convergence) of divergence form elliptic operators. This notion has several applications in the theory of composite materials, heterogeneous media and multiscale problems, where one aims at giving a macroscopic description of oscillations or discontinuities appearing at a microscopic scale. The use of weak convergence is crucial in this theory in order to analyze the asymptotic behavior of highly oscillating functions, and the compensated compactness method is one of the mathematical tools which was developed to this purpose.

The course will consist of approximately 10 hours, distributed in 4 or 5 lectures. For practical informations concerning the course, please contact Prof. A. Porretta (porretta@mat.uniroma2.it)