Homogenization of transport equations

In many ecological and medical applications we consider species that live in a heterogeneous environment. We are often interested in the behavior of the species on a large scale (macroscopic scale) and we like to average-out the small scale variations. The method of homogenization describes exactly this “averaging”. It was developed in the physical context and it is slowly finding use in biological applications. In this talk I will give a few examples and explain how homogenization works. I will use it to find averaged transport equations and their diffusion limits.

(joint work with F. Lutscher)