

From kinetic transport models to fractional-diffusion-advection equations with applications to biology

In recent years the concept of superdiffusion has played a crucial role in the description of many phenomena appearing in nature. In particular, it has been recently discovered that the bacteria *E. coli* may exhibit a superdiffusive behavior under certain circumstances. Therefore, the Keller-Segel model fails in describing the behavior of *E. coli* under this setting. In this talk we shall introduce a kinetic type model, and perform the rigorous passage to the macroscopic limit, obtaining a fractional type version of the Keller-Segel model.