Abstract: "Porous medium equation with proliferation"

Motivated by mathematical oncology, we present two PDE's, the viscous poruous medium equation and the Fisher-Kolmogorov-Petrovskii-Piskunov model (FKPP). Formally, we derive the viscous porous medium equation as the limit of the empirical measure of a system of interacting particles with intermediate interaction-range and large amplitude. We illustrate that also the FKPP model is a limit of a particle system with certain branching mechanism. At the end, we briefly discuss a combination of these two PDE's, the porous medium equation with proliferation.

This is based on ongoing research with Franco Flandoli.