**Ewelina Zatorska**

*On Particle interactions mediated by dynamical network*

Starting from a microscopic model of particles interacting through a dynamical network of links, via the mean field limit, I will formally derive coupled kinetic equations for the particle and link densities. I will then consider a fast linking/unlinking limit and qualitatively the resulting aggregation-diffusion equation. I will give a precise condition for the phase transition, and, using the central manifold reduction, I will characterize the type of bifurcation at the instability onset. I will also provide the numerical verification of these results. This is a talk based on two papers in collaboration with: J. Barre, J.A. Carrillo, P. Degond, and D. Peurichard.