Modeling Contagion by Aggregation Functions (Joint work with Agnieszka Rusinowska and Xavier Venel)
We use the approach based on aggregation functions to investigate the contagion phenomenon in a countably infinite society of individuals interacting with their neighbors. The contagion process is defined as a Markov process with an uncountable set of states, and hence the analysis requires the involvement of sigma-fields. We study in details two types of aggregation functions -- strict, and Boolean -- and discuss briefly the case of nonstrict and nonBoolean aggregation functions. We provide the convergence analysis, determine absorbing and transient sets, and irreducible classes. When considering Boolean aggregation functions, the contagion process becomes deterministic, and the contagion model of Morris (2000) can be seen as a particular case of our framework with aggregation functions. In this case, consensus and non trivial absorbing states as well as cycles and infinite trajectories can exist.

A survey on the core of cooperative games
The core is perhaps the most popular solution concept in cooperative game theory: it is the set if payments such that no coalition can be better off by leaving the game. Mathematically, thre core is a convex closed polyhedron which may be empty. In this survey, we recall the classical results about nonemptiness of core by Bondareva-Shapley, the core of convex games, largeness and stability of the core, exact games, and we provide also a survey of new and recent results about vertices of the core, core stability and various other properties.