Discontinuous ODEs and graph optimization

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In this talk I will discuss some optimization methods in spectral graph theory aimed to cluster a weighted undirected graph under certain constraints. The use of a gradient system is the main tool in the methodology. Due to the non-negativity constraint on the weights of the graph, it is possible that a discontinuous ODE is encountered which leads to the possibility that only a generalized solution of the gradient system exists. This situation has to be handled accurately in a numerical integration of the system. This is a joint work with Eleonora Andreotti (L'Aquila and Torino), Dominik Edelmann and Christian Lubich (Tuebingen).