# Evolution of infinite populations of immigrants: micro- and mesoscopic description

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A model is proposed of an infinite population of entities immigrating to a noncompact habitat, in which the newcomers are repelled by the already existing population. Its evolution is described at micro- and mesoscopic levels. The microscopic states are probability measures on the corresponding conguration space. States of populations without interactions are Poisson measures, fully characterized by their densities. The evolution of micro-states is Markovian and obtained from the Kolmogorov equation with the use of correlation functions. The mesoscopic description is made by a kinetic equation for the densities. We show that the micro-states are approximated by the Poissonian states characterized by the densities obtained from the kinetic equation. Both micro- and mesoscopic descriptions are performed and their interrelations are analyzed, that includes also discussing the problem of the appearance of a spatial diversity in such populations.