**Quasi-stationary distributions and Fleming-Viot processes in countable spaces.**

Pablo Groisman

Univ. Buenos Aires

**Abstract:**
Consider an irreducible pure jump Markov chain with rates Q in the (countable) state space S \cup \{0\} with 0 as an absorbing state. In the associated Fleming-Viot process (FV) N particles evolve independently in S with rates Q until one of them attempts to jump to the absorbing state 0. At this moment the particle comes back to S instantaneously, by jumping to one of the positions of the other particles, chosen uniformly at random. Three main problems come up in
this context, namely (a) the convergence of the empirical measure of FV in finite time intervals to the distribution of the process conditioned to not being absorbed, (b) the ergodicity of FV for fixed N and (c) the convergence of the empirical profile of FV under the invariant measure as N goes to infinity to a quasi-sationary distribution.

We will show that (a) can be obtained under fairly general conditions. Problems (b) and (c) are more delicate but we will show some examples where we can obtain some information. Of particular interest are the processes that admit infinitely many quasi-stationary distributions. Joint work with A. Asselah, P. Ferrari and M. Jonckheere.