A specific $N$-particle system of Fleming-Viot Type: Recurrence-transience properties

Alexander Klump$^{1,*}$

$^1$Department of Mathematics, University of Paderborn, Germany

*Email: aklump@math.uni-paderborn.de

We introduce a particle process of $N$ individuals which perform Brownian motion in one or more dimensions up to an exponential time with rate $\lambda N$. At this time the particle with the minimal fitness jumps on an uniformly chosen remaining particle, where fitness is measured by the function $s(x) = 1/||x||$. We can prove that the localisation of the jumps strongly counteracts the transient behaviour of the Brownian motion in the sense that the process is (neighbourhood-)positive-recurrent for all choices of parameters.