Long-time behavior for monostable (doubly) nonlocal reaction-diffusion equations

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Abstract. We consider a class of monostable equations in R^d with nonlocal diffusion and local or nonlocal reaction, which satisfy the linear determinacy principle. For the case where either the diffusion kernel or the initial condition have appropriately regular heavy tails, we find sharp estimates to describe accelerated front propagation. For the one-dimensional case we show also that the propagation to the right direction is fully determined by the right tails of either the kernel or the initial condition. We describe both cases of integrable and monotone-like initial conditions which may yield different rates of the acceleration. For the case where (anisotropic multidimensional) kernel is decaying at least exponentially fast in a direction and if the initial condition has the similar property, we show that the solution propagates in this direction at most linearly in time. For a particular equation arising in population ecology, we study then traveling waves and describe the front of propagation. This is a joint work with Pasha Tkachov (GSSI, L'Aquila).