Finite-time blow-up of L^∞ Weak solutions of an aggregation equation

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Abstract: In recent years, the integrodifferential equation $u_t + \nabla \cdot [(\nabla K) * u)u] = 0$ has been used to model biological aggregation and dispersion. During this talk, we discuss recent work on existence, uniqueness, and finite-time blow-up of solutions to this equation for nonnegative initial data belonging to $L^1 \int L^\infty$. For kernels K which are rotationally invariant, nonnegative, and decay at infinity, finite-time blow-up is proven when K has a Lipschitz point at the origin.