

Finite-time blow-up in a quasilinear Keller-Segel system with degenerate diffusion

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Abstract

We consider the initial-boundary problem for a quasilinear Keller-Segel system with degenerate diffusion. In the case of nondegenerate diffusion it is known that $q = m + 2/N$ is the critical condition for boundedness and blow-up, where m denotes the intensity of diffusion, q denotes a nonlinearity and N is the space dimension. It is expected that the case of degenerate diffusion has the same critical condition. However, as to blow-up results, the previous works gave only existence of unbounded solutions which possibly blow up in infinite time. The purpose of this talk is to establish finite-time blow-up of energy solutions for the initial data with large negative energy. This is a joint work with Takahiro Hashira and Sachiko Ishida.