

Critical mass in a parabolic-elliptic Patlak-Keller-Segel equation with nonlinear diffusion

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For a specific choice of the (nonlinear) diffusion, there is a threshold mass in the parabolic-elliptic Patlak-Keller-Segel equation with nonlinear diffusion in space dimension greater or equal to three which separates initial data leading to global solutions and those blowing up in finite time, a situation reminiscent from the two-dimensional case with linear diffusion. There are however some new features such as the existence of integrable stationary solutions and backward self-similar solutions which will be discussed.