

# Supersolutions of nonlinear parabolic systems and their applications

Kazuhiro Ishige

Tohoku University

`ishige@math.tohoku.ac.jp`

We construct supersolutions for a class of nonlinear parabolic systems by using scalar nonlinear parabolic equations. The supersolutions enable us to obtain optimal sufficient conditions for the existence of the solutions and optimal lower estimates of blow-up rate of the solutions. Furthermore, we establish a criterion for the location of the blow-up set and obtain sufficient conditions for the boundedness of the blow-up set and no boundary blow-up for type I blowing up solutions. This talk is based on the joint works with T. Kawakami and M. Sierzega (JDE, 2016) and with Y. Fujishima and H. Maekawa (preprint).