Sci. Math. Japonicae Vol., No. (), -

## CONVERGENCE OF SOLUTIONS TO SIMPLIFIED SELF-ORGANIZING TARGET-DETECTION MODEL

## Satoru Iwasaki $^1$

## June 13, 2018

ABSTRACT. We consider the initial-boundary value problem for a quasilinear parabolic equation. After constructing local solutions to the equation, we show a priori estimates for them and prove global existence of solutions. A Lyapunov function is constructed for the global solutions. Furthermore, existence of a unique stationary solution is observed for each level set  $\chi_l$  (given by (4.1)), together with some characterization by a functional equation. By virtue of the Lyapunov function, we can show longtime convergence of all global solutions with initial values in  $\chi_l$  to the unique stationary solution.

 $Key\ words\ and\ phrases.$  Quasilinear parabolic equation, Keller-Segel type equation, Stationary solution, Convergence.