1083-35-129 **Hiroko Yamamoto***, Mathematical Institute, Tohoku University, Aoba, Aoba-ku, Sendai, Miyagi 980-8578, Japan, and **Izumi Takagi**. *Effect of the heterogeneity on the concentration point in the ground-state solution of a reaction-diffusion equation.* Preliminary report.

In a bounded domain in the n dimensional Euclidian space, we consider positive solutions of the semilinear elliptic equation

$$\varepsilon^2 \Delta u - a(x)u + b(x)u^p + \delta\sigma(x) = 0$$

under homogeneous Neumann boundary conditions. Here, $a(x)$, $b(x)$ are positive, and $\sigma(x)$ is nonnegative; $\varepsilon > 0$, $\delta \geq 0$ are constants. This problem appears in the stationary problem for the shadow system of the activator-inhibitor model proposed by Gierer and Meinhardt.

The mountain pass lemma gives us a ground-state solution. For sufficiently small ε the ground-state solution concentrates around a single point P_0. In this talk, under some conditions on p, we describe the procedure to locate P_0 in terms of $a(x)$, $b(x)$ and $\sigma(x)$. We discuss how to find the concentration point for δ sufficiently small from that of the case $\delta = 0$. It is to be noted that P_0 may be in the interior of or on the boundary of the domain, depending on the distribution of $a(x)$, $b(x)$ and $\sigma(x)$. (Received August 25, 2012)