1073-35-45 **Guangming Yao*** (guangmingyao@gmail.com), 3200 N. Cramer St., Milwaukee, WI. *Localized Method of Approximate Particular Solutions for Solving Reaction-Diffusion Equations.* Preliminary report.

In this paper, we extend the localized method of approximate particular solutions(LMAPS) to solving reaction-diffusion equations with different boundary conditions and node distributions. The following 3D PDE is considered:

$$\frac{\partial u}{\partial t} = D\nabla^2 u + f(u), \tag{1}$$

where D, t, u stand for diffusion coefficient, time and concentration, respectively. f is a function of unknown variable u in which $u = u(x, y, z, t), (x, y, z) \in \Omega \bigcup \partial\Omega$. We seek the solution of the above equation provided that the initial value of u and boundary conditions are known. The LMAPS allows the use of a small neighborhood of points to find the approximate solution of the given partial differential equation. The time space can be discretized in an implicit way, which leads more stable result compared with explicit methods. (Received July 20, 2011)