

1128-35-41

Xiaoqian Xu* (xxu@math.cmu.edu), Providence, RI 02906, and **Alexander Kiselev** and **Gautam Iyer**. *Suppression of chemotactic explosion by mixing*.

Keller-Segel equation is one of the most studied PDE models of processes involving chemical attraction. However, solution of Keller-Segel equation can exhibit dramatic collapsing behavior, where the population density of bacteria concentrates positive mass in a measure zero region. In other words, there exist initial data leading to finite time blow up. In this talk, we will discuss the possible effects resulting from interaction of chemotactic and fluid transport processes, namely we will consider the Keller-Segel equation with additional advection term modeling ambient fluid flow. We will prove that the presence of fluid can prevent the singularity formation. We will discuss three classes of flows that have the explosion arresting property. Both classes are known as very efficient mixers. (Received February 03, 2017)