1132-39-345 **Ping Liu*** (liuping506@gmail.com), Harbin Normal University, heilongjiang,China, Harbin, Heilongjia 150025, Peoples Rep of China. *PATTERN FORMATION OF THE ATTRACTION-REPULSION KELLER-SEGEL SYSTEM.*

In this paper, the pattern formation of the attraction-repulsion Keller-Segel (ARKS) system is studied analytically and numerically. By the Hopf bifurcation theorem as well as the local and global bifurcation theorem,we rigorously establish the existence of time-periodic patterns and steady state patterns for the ARKS model in the full parameter regimes, which are identi ed by a linear stability analysis. We also show that when the chemotactic attraction is strong, a spiky steady state pattern can develop. Explicit time-periodic rippling wave patterns and spiky steady state patterns are obtained numerically by carefully selecting parameter values based on our theoretical results. The study in the paper asserts that chemotactic competitive interaction between attraction and repulsion can produce periodic patterns which are impossible for the chemotaxis model with a single chemical (either chemo-attractant or chemo-repellent). (Received July 25, 2017)