1152-35-271 **Juraj Foldes*** (foldes@virginia.edu), **Denis Bonheure** and **Jean-Baptiste Casteras**.

Bifurcations and singular solutions for super-critical Keller-Segel equation.

We will discuss singular radially symmetric solution of the stationary Keller-Segel equation, that is, an elliptic equation with exponential nonlinearity, which is super-critical in dimension bigger than 2. The solutions are unbounded at the origin and we show that they describe the asymptotics of bifurcation branches of regular solutions. In particular, we will prove that for any ball and any positive k, there is a singular solution that satisfies Neumann boundary condition and oscillates at least k times around the constant equilibrium. Moreover, we will show that in low dimensions there are regular solutions satisfying Neumann boundary conditions that are close to singular ones. Hence, it follows that there exist regular solutions on any ball with arbitrarily fast oscillations. (Received September 06, 2019)