

Boundedness and stabilization in a degenerate parabolic–elliptic–elliptic attraction–repulsion chemotaxis system

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In this talk we consider the degenerate parabolic–elliptic–elliptic attraction–repulsion chemotaxis system

$$\begin{cases} u_t = \nabla \cdot (u^{m-1} \nabla u - \chi u^{p-1} \nabla v + \xi u^{q-1} \nabla w), & x \in \Omega, \ t > 0, \\ 0 = \Delta v + \alpha u - \beta v, & x \in \Omega, \ t > 0, \\ 0 = \Delta w + \gamma u - \delta w, & x \in \Omega, \ t > 0, \end{cases}$$

where $\Omega \subset \mathbb{R}^n$ ($n \in \mathbb{N}$) is a smoothly bounded domain, $m \geq 1$, $p, q \geq 2$, $\chi, \xi, \alpha, \beta, \gamma, \delta > 0$ are constants. In the case that $\chi\alpha - \xi\gamma < 0$, global existence and boundedness in the nondegenerate version of the above system were obtained in [1]. In this talk we derive global existence and boundedness in the above degenerate system when $\chi\alpha - \xi\gamma < 0$, and we present recent observations on stabilization.

- [1] Y. Chiyo, T. Yokota, *Boundedness and finite-time blow-up in a quasilinear parabolic–elliptic–elliptic attraction–repulsion chemotaxis system*, Z. Angew. Math. Phys. **73** (2022), Paper No. 61, 27 pages.