数学与系统科学研究院

计算数学所学术报告

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报告题目：

Pathway-based mean-field models for E. coli chemotaxis

邀请人：　　明平兵 研究员

报告时间：**2014** 年 **9** 月 **12** 日（周五）

上午 **10:00-11:00**

报告地点：　　数学院南楼七层 **702** 会议室

Abstract:

In this talk, we give a mathematical derivation of a pathway- based mean-field model for E. coli chemotaxis based on the moment closure in kinetic theory. The pathway based model incorporate the most recent intracellular chemical dynamics. The derived moment system, under some assumptions, gets to the chemotaxis model pro- posed in [G. Si, T. Wu, Q. Quyang and Y. Tu, Phys. Rev. Lett., 109 (2012), 048101], especially an important physical assumption made in which can be understood explicitly in this new moment system. We obtain the Keller-Segal limit by considering the moment system in the regime of long time and strong tumbling rate. Numerical experiments are presented to show the agreement of the moment system with (individual based) signaling pathway- based E. coli chemotaxis simulator ([L. Jiang, Q. Ouyang and Y. Tu, PLoS Comput. Biol., 6 (2010), e1000735])

欢迎大家参加！