

Contribution ID: 305

Type: **Oral Presentation**

Reaction diffusion approximation for nonlocal interactions

Wednesday, 11 July 2018 11:00 (30 minutes)

Recently, nonlocal interactions (spatial long range interactions) have attracted attention in many fields. Mathematical treatment of nonlocal interaction is mainly based on convolution with kernels. If the profile of a nonlocal interaction is detected by experiments, we can easily investigate how patterns are generated by numerical simulations. However, nonlocal interactions are often inconvenient for observing specific mechanisms behind the target phenomena. In response to this, we proposed a new method that could convert nonlocal interactions into a reaction-diffusion system with auxiliary unknown variables. In this talk, we will explain the method of approximation, and how to determine the parameters of the reaction-diffusion system for the given kernel shape.

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Session Classification: Nonlocal models in biology

Track Classification: Minisymposium: Nonlocal models in biology