

1142-83-161

Hatim Kareem Khudhair* (hkkz89@mst.edu), 1706 N Elm St #12, Rolla, MO 65401, and

Zhang. *Numerical simulation of pattern formation of the spatial-fractional Gray-Scott equation.*

In this talk, we introduce numerical simulation of pattern formation of the spatial-fractional Gray-Scott equation to understand the nonlocal effects of the fractional Laplacian. The linear stability analysis will be examined to predict the conditions of the Turing pattern. Furthermore, we discretize the fractional Gray-Scott equation by the Fourier pseudo-spectral method in space and the 4th order Runge-Kutta method in time, and then we numerically investigate the effects of the fractional exponent on the spatiotemporal patterns formation and pattern selection in Gray-Scott system. The pattern formations in the standard and fractional Gray-Scott models will be compared in this study to give more insights of the nonlocal effects (Received September 02, 2018)