Contribution ID: **147** Type: **Poster Presentation**

Stability analysis of a mathematical model with distributed delay

Monday, 9 July 2018 19:45 (15 minutes)

Gene expression and genetic regulatory networks (GRNs) have become important areas of study because they play an important role in solving issues related to human health such as cancer diseases. Cancers can be hard to recognise and the best way to improve their defected is to understand the underlying mechanisms of genetic regulatory dynamics. This means introducing and improving mathematical models of GRNs to reflect oscillatory phenomena. In this work, we propose a lac operon model with time delay and nonlinear degradation rate for mRNA and investigate the nonlinear dynamical behaviour arising from the model, such as stability and Hopf bifurcation of the equilibrium, by taking the average delay as the bifurcation parameter. From the dynamical behaviour of this system: the equilibrium is stable in the absence of delay or when the delay is small; as time delay increases gradually then the stability changes and Hopf bifurcation happens. Then reverse a Hopf bifurcation to translate the equilibrium of the system from unstable to stable steady state.

Primary author: Mrs ALRIKABY, Zenab

Presenter: Mrs ALRIKABY, Zenab

Session Classification: Poster Session

Track Classification: Disease - non-infectious