

Seminár z matematickej biológie

Mathematical Biology Seminar

Utorok, 21.6.2011 / Tuesday, June 21, 2011

13:00 - 14:00, poslucháreň C / 1-2 pm, Auditorium C

[Tomáš Gedeon](#)

Department of Mathematical Sciences, University of Montana, USA

Elongation process in transcription and translation

Abstract:

Transcription of DNA and translation of mRNA are both processes where a molecular machine moves along a one dimensional chain. In a high growth conditions and for highly transcribed genes the polymerases can experience traffic jams, which may lead to significantly longer transcription times. Our goal is to quantify this phenomenon.

In this talk we will first review continuous time Markov models and ordinary differential equations models for the elongation process. Then we rigorously derive nonlinear scalar traffic model as a limit of the ODE model. We then numerically illustrate the effect of polymerase pausing on the transcriptional delay.