MIT
MATHEMATICS

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MATHEMATICS

Simple Person's Applied Math Seminar (SPAMS)

Thursday, November 14, 2019

6:00pm – 7:00pm **Room : 2 - 132**

Chris Rackauckas
(MIT Mathematics)

"Mathematical models of next generation of pharmocometrics"

Abstract

In this talk we will look at the mathematics behind the field of pharmacometrics. Pharmacometrics is the study of drug matabolism and is being used to uncover strategies for personalized precision dosing. We will look into three aspects which can be utilized to better predict a patients drug response: stochastic differential equation models of process noise, large-scale differential equation models of internal biological processes (quantitative systems pharmacology), and mixed methodologies with machine learning, such as neural differential equations, to automatically learn models from electronic health record data. We will explore the mathematical and computational challenges that are being uncovered in the field and invite the audience to think of new software tools which can be given to the pharmacometric community to solve this issue of individualized healthcare.