Department of Mathematics and Statistics Colloquium

Patient-specific modeling of cardiovascular and respiratory dynamics

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Abstract: It is estimated that one in three adults in the United States suffer from some form of cardiovascular disease (CVD), yet the mechanisms for understanding the underlying interactions contributing to CVD are not well understood. In efforts to address this issue, we combine mathematics, engineering, and medicine in an interdisciplinary approach to understanding interactions within the cardiovascular system. Mathematical models can be used to extract clinical biomarkers of CVD that are difficult to assess non-invasively. In this talk we will focus in particular on cardiorespiratory compartmental models that describe system-level changes in blood pressure and flow in response to breathing and orthostatic challenges. These models are made subject-specific by verifying against patient data and thus may have predictive value.

Monday, February 1 at 3:45 in Roop 103

refreshments at 3:30