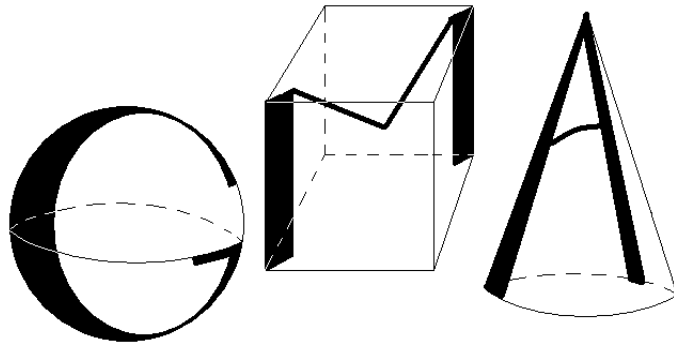




Colloquium

Wednesday September 2, 3:00 p.m. (8th Period)

In the Atrium
Refreshments provided.

Speaker: Kyle Adams

Title: When “Optimal” Isn’t Best: Toward Calculating
Robust Treatments for Cancer

Abstract

Improving an outcome by even 5% can make a big difference. For example, finding a treatment regimen that increases median patient survival time by 5% means extra time with loved ones for patients. It can also mean the difference between clinical trial success and failure for a therapy. In the past, trial-and-error was used to find treatment regimens that yield better patient outcomes. Now, we have mechanistic mathematical models of disease dynamics that can help. Optimal control applied to these models can compute regimens that are predicted to achieve the best patient outcomes; these regimens can then be tested experimentally and clinically. In this talk, I will introduce some history of how disease models have been used to make clinical decisions, and my related work on modeling triple-negative breast cancer, the most lethal subtype of breast cancer. Finally, I will discuss why we must and how we might improve the “robustness” of an “optimal” regimen that is calculated using optimal control.