



Mathematical Biology Seminar

Monday, October 21, 2024

3 pm MDT - 457 CAB (in person)

Join Zoom Meeting

<https://ualberta-ca.zoom.us/j/97624718507>

Meeting ID: 976 2471 8507



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Explaining Methane in Oil Sands Tailings Ponds: A Game Theory Perspective

To effectively reduce methane emissions from oil sands tailings ponds, it is crucial to comprehensively understand the characteristics of methane input and the specific contribution of each element to the overall emission. In this procedure, one must have more comprehensive knowledge of the current conditions, the long-lasting nature of methane inputs and their interactions, as well as the use of different types of hydrocarbons or nutrients. In this talk, we present a new coalition game for analyzing three predominant hydrocarbon types—n-alkanes, BTEX, and iso-alkanes—in the context of hydrocarbon biodegradation within a specific bacterial population. The objective is to understand these hydrocarbons based on their durability, consumption, interaction, and concentration rates to predict each hydrocarbon contribution to the overall methane production by developing game theoretical perspectives. At the end, we provide several future frameworks based on games, control and learning.