

東北大学大学院情報科学研究科
純粋・応用数学研究センター

情報数理談話会のお知らせ

日 時： 2025 年 7 月 25 日 (金) 16:00 より 17:00 まで

場 所： 東北大学大学院情報科学研究科棟 2 階中講義室

講演者： Fu, Zhiqiong 氏 (東北大学大学院情報科学研究科)

題 目： Epidemic dynamics models on social vulnerability and public health measure (感染症流行に対する社会的脆弱性および公衆衛生対策に関する数理モデル)

備 考： この情報数理談話会は課程博士予備審査会を兼ねています

[概 要] The COVID-19 pandemic underscored the importance of social vulnerability in influencing epidemic dynamics. Epidemic outcomes varied significantly across countries and regions with similar interventions, indicating that demographic, socioeconomic, and behavioral differences can influence disease transmission. In this work, we consider a mathematical model of differential equations for the epidemic dynamics with a distribution of preventive behaviors among individuals, focusing on how the distribution of preventive behaviors influences the epidemic consequence in a community. The preventive behavior determines the level of caution regarding the disease transmission. We assume that individuals in the community can be categorized into n classes according to their caution level to a spreading disease. The caution level is reflected to not only the susceptibility to the spreading disease but also its transmissibility to others in the community. We principally investigate how the size distribution of classes could affect the final epidemic size in a community, which is defined as the population size of individuals who experienced infection, and discuss how significantly the outbreak depends on the nature of the distribution.