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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

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日　時： 2023 年 7 月 19 日㈬ 13:30 より 14:30 まで
場　所： 東北大学大学院情報科学研究科棟 2 階大講義室

講演者： Victor P. Schneider 氏（東北大学大学院情報科学研究科）
題　目： Population dynamics models on the species persistence in the native habitat with the invasion of alien species
(外来種侵入下の固有生息地における種存続性に関する個体群動態モデル)
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] Habitat fragmentation could be a threat to biodiversity. Understanding the ecological dynamics in a fragmented habitat is crucial, for example for the conservation of a species inhabiting there. However, the influence of habitat fragmentation on ecosystem stability is still debated among ecologists. In this work, we present a mathematical consideration of the influence of habitat fragmentation on an exploitative competition dynamics between native and alien species. We analyze a system of ordinary differential equations with what is called MacArthur's consumer-resource dynamics model. Our modeling focuses on how a habitat fragmentation affects the resource availability and consequently the species persistence. Through a stability analysis on the equilibrium of native species extinction, we can obtain the condition for the persistence of the native species, taking account of the mobility between the patches of the fragmented habitat. We find that the existence of a patch with a sufficient resource availability would be relevant for the persistence of the native species, while the condition for such a satisfactory patch depends on the nature of invading alien species. Furthermore we discuss a possibility for a habitat fragmentation preferable for the persistence of a native species threatened with its extinction by an alien invasion.

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ホームページ：https://www.math.is.tohoku.ac.jp/research/colloquium.html

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