

Abstract

The study of epidemiology is often done with an assumption that the population is homogeneously mixed, and the disease dynamics is uniform. However, this is not always true, and cultural beliefs and economic activities significantly contribute to segregation not necessarily in spatial dimension but on the way of life. In this study, the dynamics of HIV/AIDS is studied in four distinct fisher-folk population patches, both individually and under all-to-all diffusive coupling. It was found that, the dynamics of each patch is periodic, and there exist an attracting invariant stable synchronization manifold. The manifold of the coupled system displayed robustness under small perturbation, even with a small coupling strength of $k \ll 1$. This guarantees uniformity of long term metapopulation disease dynamics.