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XiongXiong Bao and **Wenxian Shen*** (wenxish@auburn.edu), Auburn, AL. *Criteria for the Existence of Principal Eigenvalue of Time-Periodic Cooperative Linear Systems with Nonlocal Dispersal.*

This talk is concerned with the criteria for the existence of principal eigenvalues of time-periodic cooperative linear nonlocal dispersal systems with Dirichlet type, Neumann type or periodic type boundary conditions. It first introduces the definition of principal eigenvalues of such cooperative systems. Next, it shows that a time-periodic cooperative linear nonlocal dispersal system has a principal eigenvalue in the following cases: the nonlocal dispersal distance is sufficiently small; the spatial inhomogeneity satisfies the so-called vanishing condition, or the spatial inhomogeneity is nearly globally homogeneous. It should be pointed out that a cooperative linear nonlocal dispersal system may not have a principal eigenvalue. Finally, it discusses some applications of the established principal eigenvalue theory. (Received January 14, 2019)